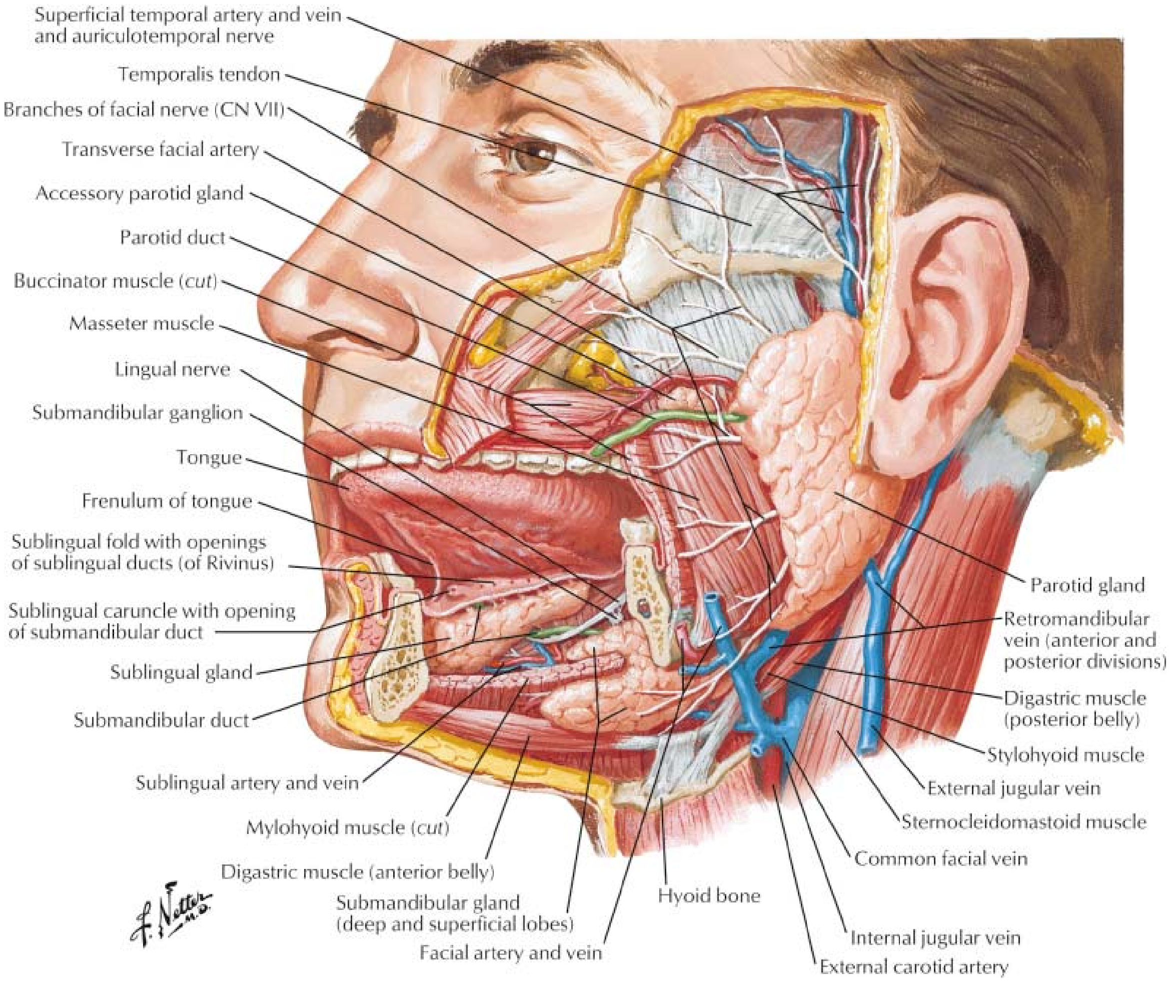
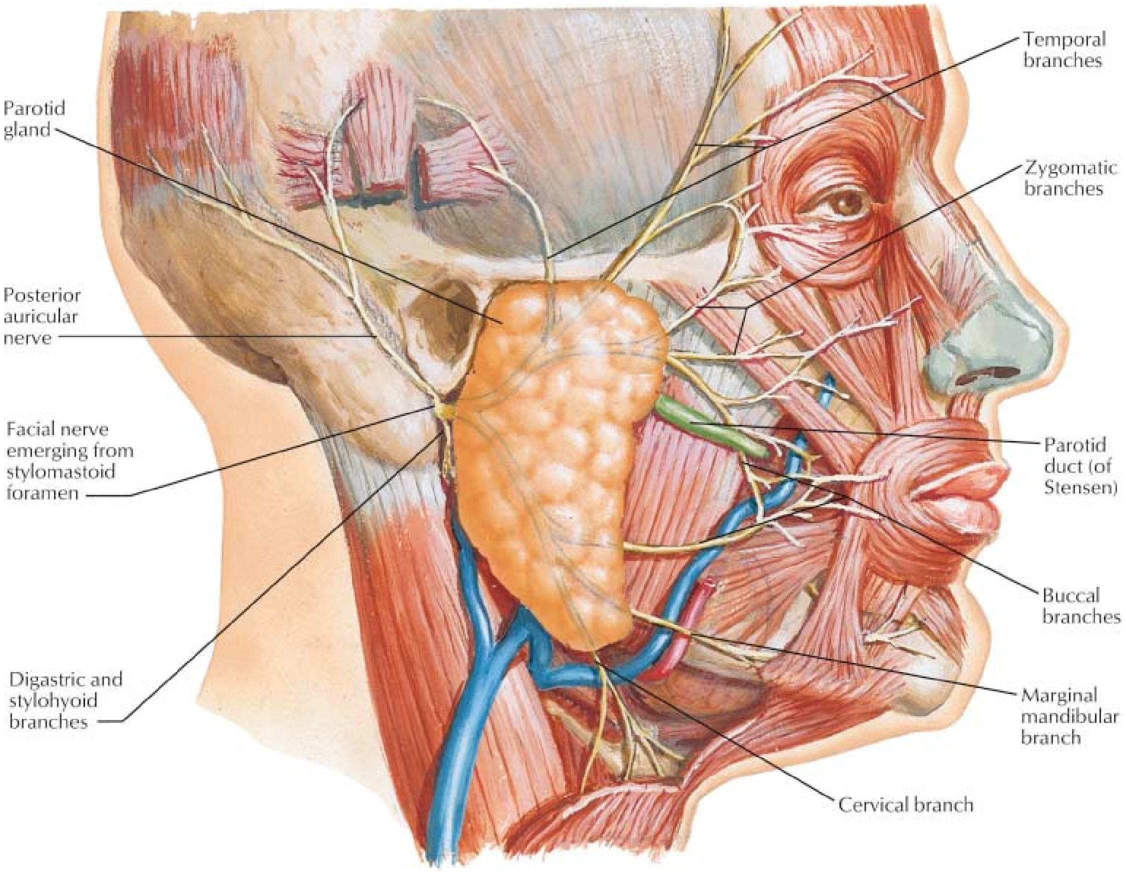

Superficial temporal artery and vein and auriculotemporal nerve
Temporalis tendon
Branches of facial nerve (CN VII)
Transverse facial artery
Accessory parotid gland
Parotid duct
Buccinator muscle (*cut*)
Masseter muscle
Lingual nerve
Submandibular ganglion
Tongue
Frenulum of tongue
Sublingual fold with openings of sublingual ducts (of Rivinus)
Sublingual caruncle with opening of submandibular duct
Sublingual gland
Submandibular duct
Sublingual artery and vein
Mylohyoid muscle (*cut*)
Digastric muscle (anterior belly)
Submandibular gland (deep and superficial lobes)
Facial artery and vein
Hyoid bone
Parotid gland
Retromandibular vein (anterior and posterior divisions)
Digastric muscle (posterior belly)
Stylohyoid muscle
External jugular vein
Sternocleidomastoid muscle
Common facial vein
Internal jugular vein
External carotid artery

Plate 54 Facial Nerve Branches and Parotid Gland

See also **Plates 53** (s0270) , **134** (s0710)


Temporal branches
Parotid gland
Zygomatic branches
Posterior auricular nerve
Facial nerve emerging from stylomastoid foramen
Parotid duct (of Stensen)
Buccal branches
Digastric and stylohyoid branches
Marginal mandibular branch
Cervical branch

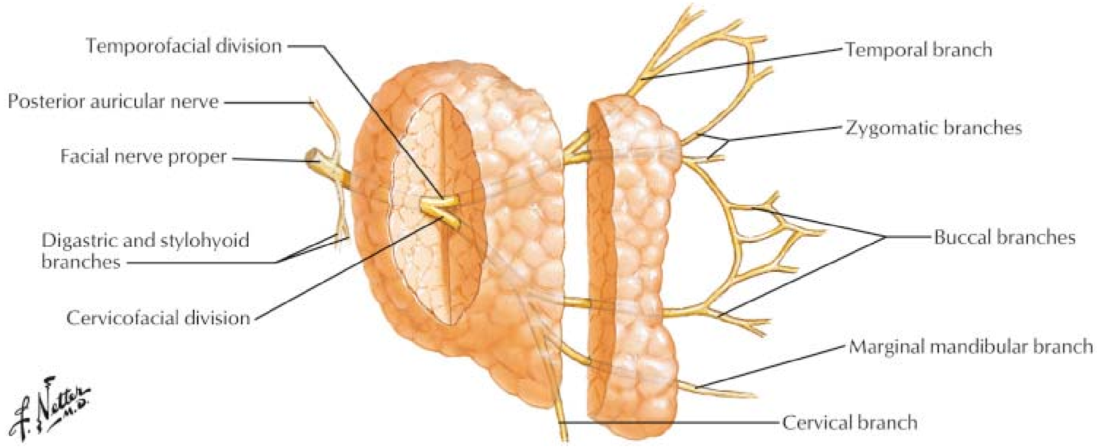

Temporofacial division
Posterior auricular nerve
Facial nerve proper
Digastric and stylohyoid branches
Cervicofacial division
Temporal branch
Zygomatic branches
Buccal branches
Marginal mandibular branch
Cervical branch
F. Netter M.D.

Plate 55 Muscles Involved in Mastication

For facial muscles see **Plate 31** (s0155)

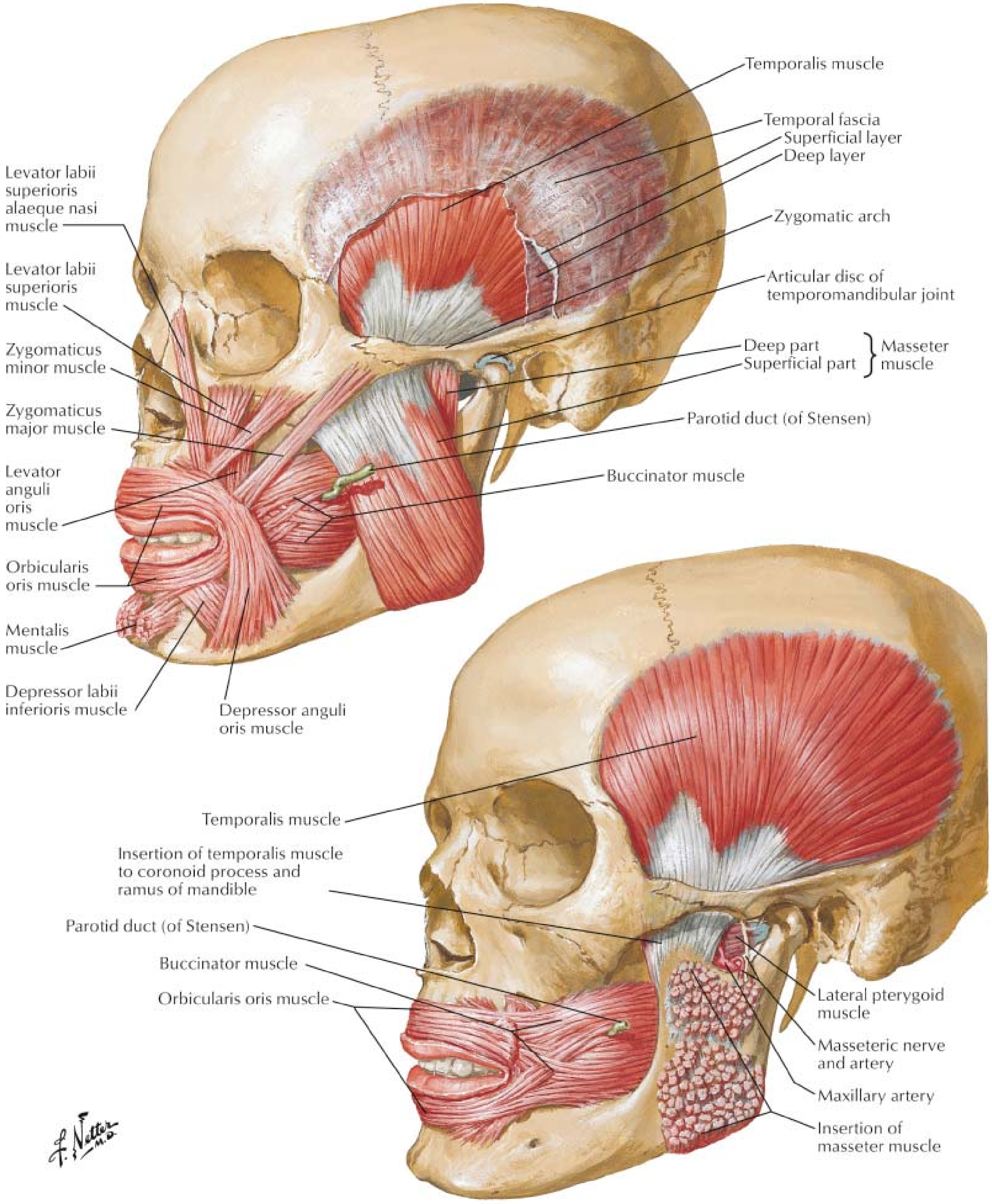
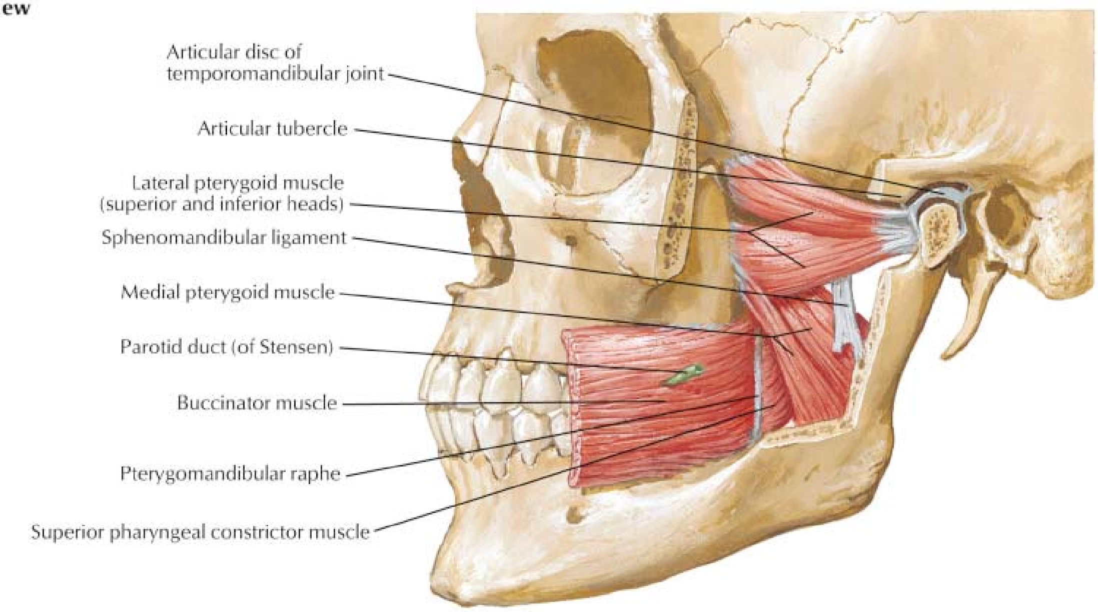

Temporalis muscle
Temporal fascia
Superficial layer
Deep layer
Levator labii superioris alaeque nasi muscle
Zygomatic arch
Levator labii superioris muscle
Articular disc of temporomandibular joint
Zygomaticus minor muscle
Deep part
Superficial part
Masseter muscle
Zygomaticus major muscle
Parotid duct (of Stensen)
Levator anguli oris muscle
Buccinator muscle
Orbicularis oris muscle
Mentalis muscle
Depressor labii inferioris muscle
Depressor anguli oris muscle
Temporalis muscle
Insertion of temporalis muscle to coronoid process and ramus of mandible
Parotid duct (of Stensen)
Buccinator muscle
Orbicularis oris muscle
Lateral pterygoid muscle
Masseteric nerve and artery
Maxillary artery
Insertion of masseter muscle

Plate 56 Muscles Involved in Mastication (continued)

See also **Plates 55** (s0280) , **59** (s0300)

Lateral view


Articular disc of temporomandibular joint
Articular tubercle
Lateral pterygoid muscle (superior and inferior heads)
Sphenomandibular ligament
Medial pterygoid muscle
Parotid duct (of Stensen)
Buccinator muscle
Pterygomandibular raphe
Superior pharyngeal constrictor muscle

Posterior view

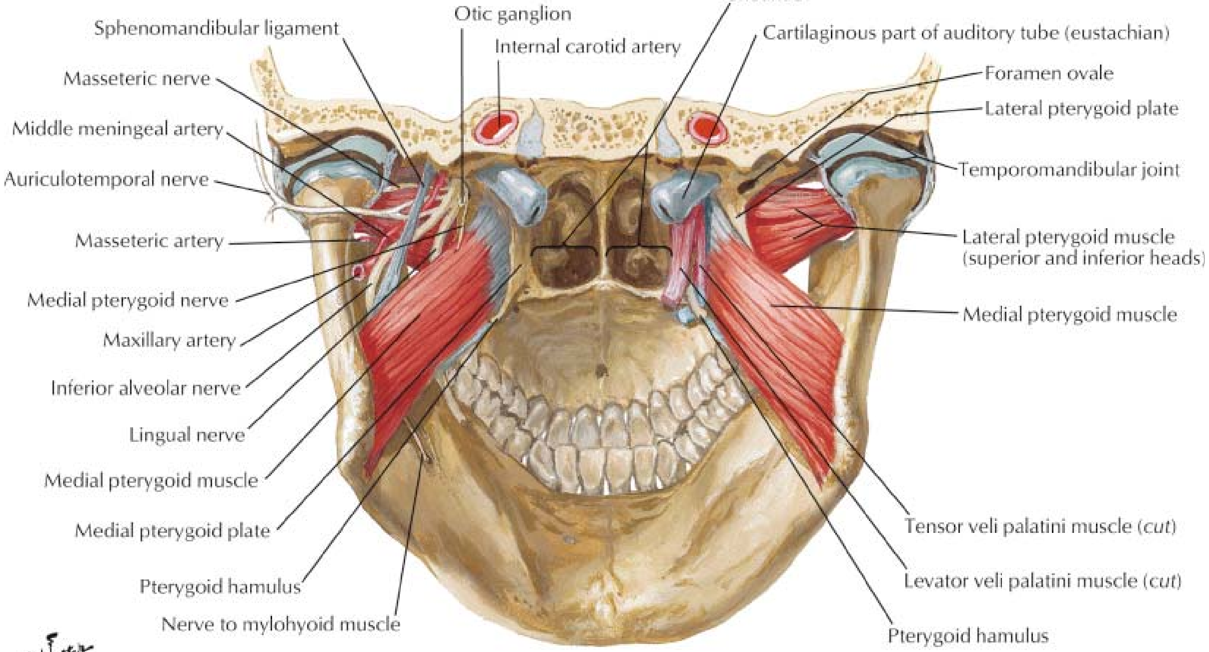

Choanae
Otic ganglion
Internal carotid artery
Sphenomandibular ligament
Cartilaginous part of auditory tube (eustachian)
Masseteric nerve
Foramen ovale
Middle meningeal artery
Lateral pterygoid plate
Auriculotemporal nerve
Temporomandibular joint
Masseteric artery
Lateral pterygoid muscle (superior and inferior heads)
Medial pterygoid nerve
Medial pterygoid muscle
Maxillary artery
Inferior alveolar nerve
Lingual nerve
Medial pterygoid muscle
Medial pterygoid plate
Tensor veli palatini muscle (*cut*)
Levator veli palatini muscle (*cut*)
Pterygoid hamulus
Nerve to mylohyoid muscle
Pterygoid hamulus

Plate 57 Maxillary Artery

See also **Plates 63** (s0320) , **83** (s0430)

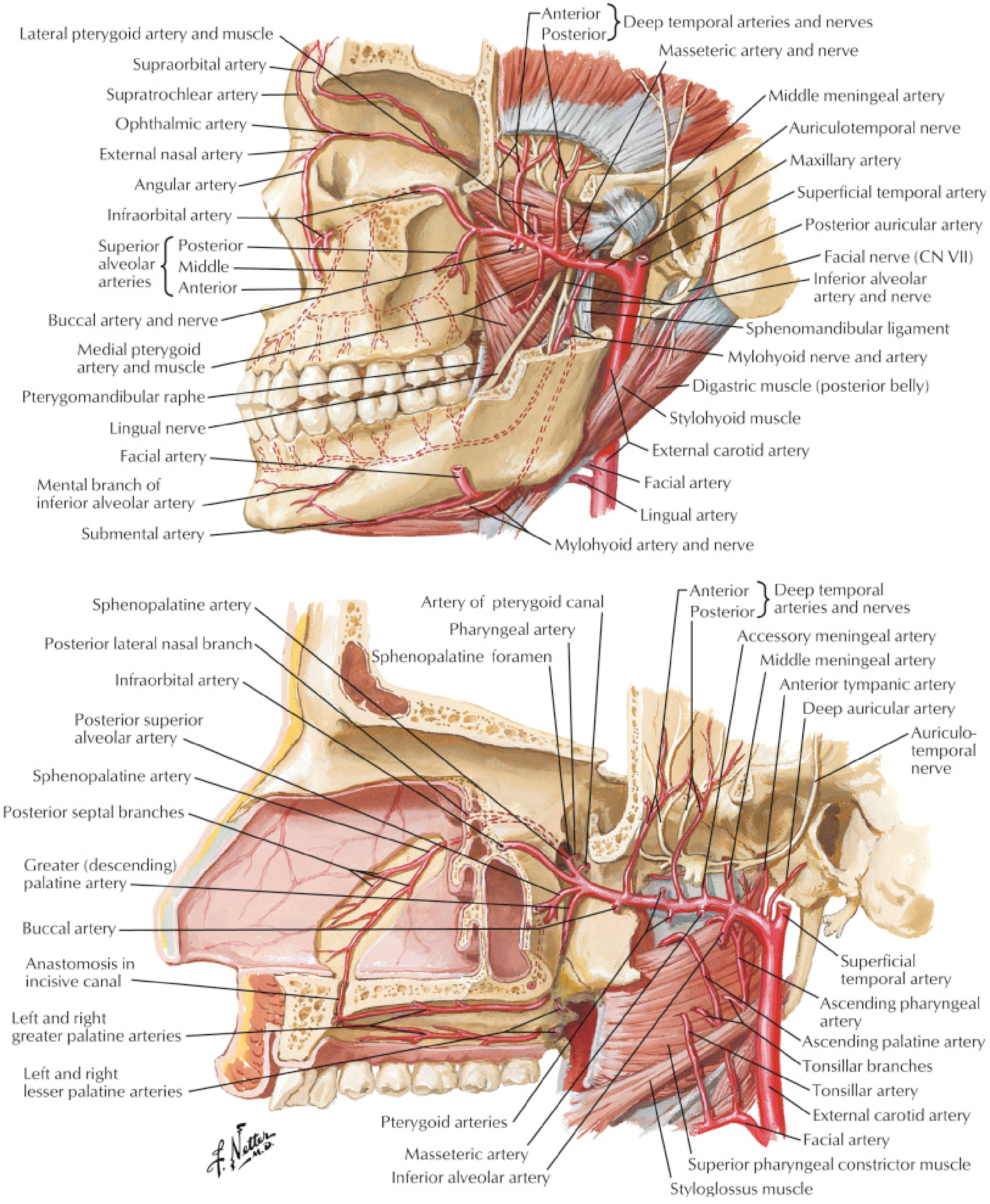

Anterior
Posterior
Deep temporal arteries and nerves
Masseteric artery and nerve
Lateral pterygoid artery and muscle
Supraorbital artery
Supratrochlear artery
Ophthalmic artery
External nasal artery
Angular artery
Infraorbital artery
Superior alveolar arteries
Posterior
Middle
Anterior
Buccal artery and nerve
Medial pterygoid artery and muscle
Pterygomandibular raphe
Lingual nerve
Facial artery
Mental branch of inferior alveolar artery
Submental artery
Middle meningeal artery
Auriculotemporal nerve
Maxillary artery
Superficial temporal artery
Posterior auricular artery
Facial nerve (CN VII)
Inferior alveolar artery and nerve
Sphenomandibular ligament
Mylohyoid nerve and artery
Digastric muscle (posterior belly)
Stylohyoid muscle
External carotid artery
Facial artery
Lingual artery
Mylohyoid artery and nerve
Sphenopalatine artery
Posterior lateral nasal branch
Infraorbital artery
Posterior superior alveolar artery
Sphenopalatine artery
Posterior septal branches
Greater (descending) palatine artery
Buccal artery
Anastomosis in incisive canal
Left and right greater palatine arteries
Left and right lesser palatine arteries
Artery of pterygoid canal
Pharyngeal artery
Sphenopalatine foramen
Anterior
Posterior
Deep temporal arteries and nerves
Accessory meningeal artery
Middle meningeal artery
Anterior tympanic artery
Deep auricular artery
Auriculo-temporal nerve
Superficial temporal artery
Ascending pharyngeal artery
Ascending palatine artery
Tonsillar branches
Tonsillar artery
External carotid artery
Facial artery
Superior pharyngeal constrictor muscle
Styloglossus muscle
Pterygoid arteries
Masseteric artery
Inferior alveolar artery

Plate 58 Proximal Maxillary and Superficial Temporal Arteries

See also **Plates 57** (s0290) , **59** (s0300) , **63** (s0320)

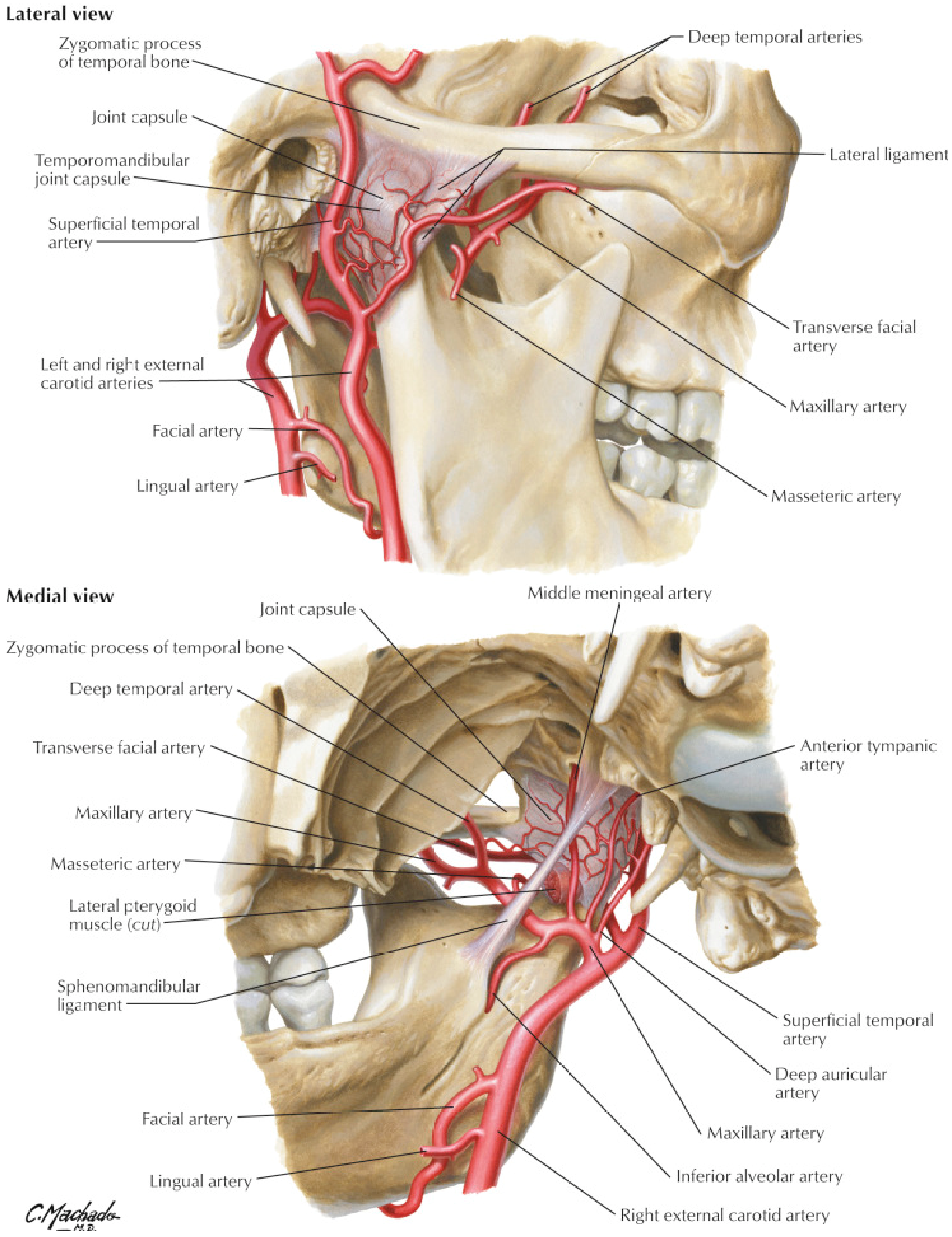

Lateral view
Zygomatic process of temporal bone
Joint capsule
Temporomandibular joint capsule
Superficial temporal artery
Left and right external carotid arteries
Facial artery
Lingual artery
Deep temporal arteries
Lateral ligament
Transverse facial artery
Maxillary artery
Masseteric artery
Medial view
Joint capsule
Zygomatic process of temporal bone
Deep temporal artery
Transverse facial artery
Maxillary artery
Masseteric artery
Lateral pterygoid muscle (cut)
Sphenomandibular ligament
Facial artery
Lingual artery
Middle meningeal artery
Anterior tympanic artery
Superficial temporal artery
Deep auricular artery
Maxillary artery
Inferior alveolar artery
Right external carotid artery
C. Machado M.D.

Plate 59 Mandibular Nerve (CN V $_3$)

See also **Plates 82** (s0425) , **133** (s0705)

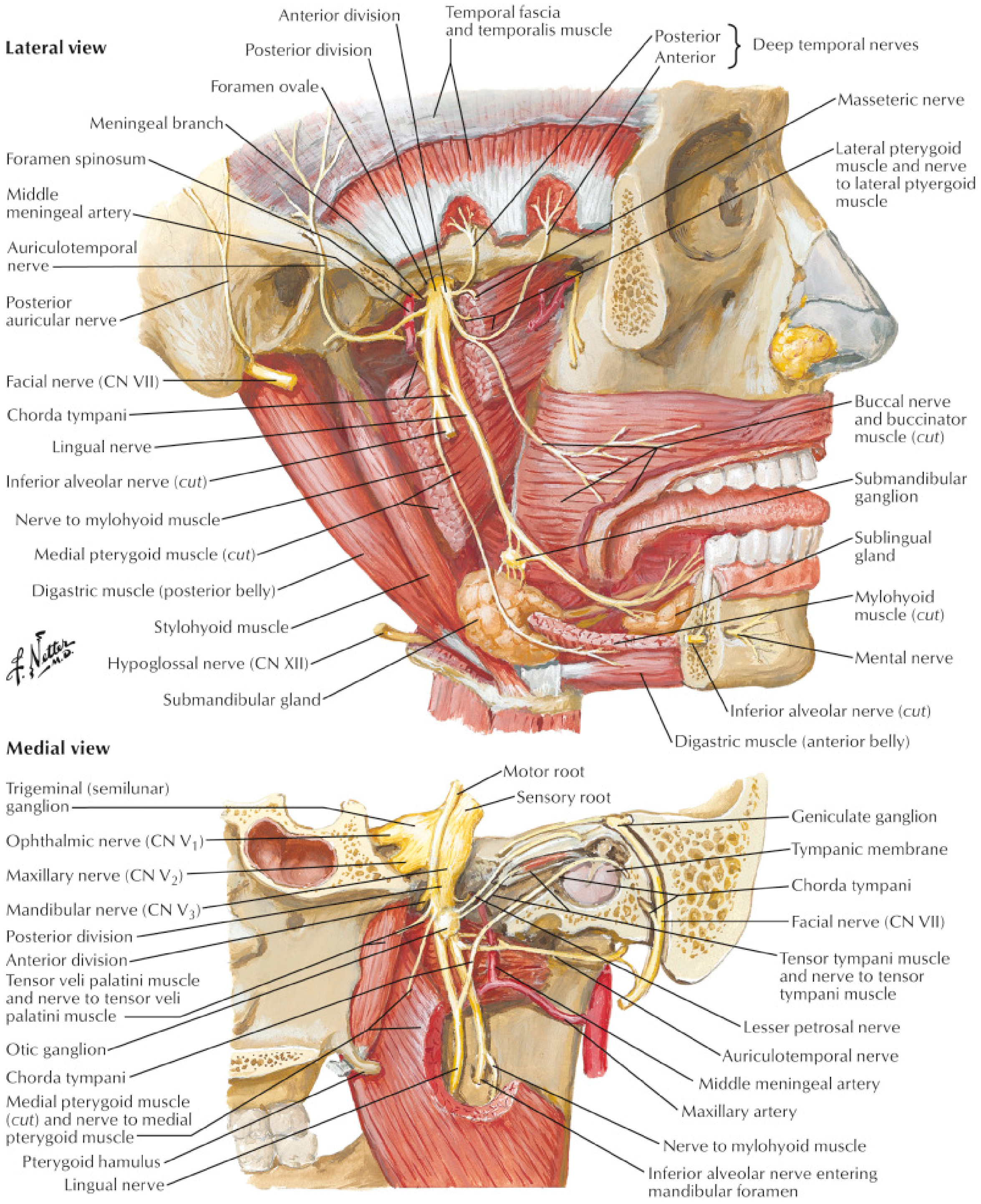

Lateral view
Anterior division
Temporal fascia and temporalis muscle
Posterior division
Posterior
Anterior
Deep temporal nerves
Foramen ovale
Masseteric nerve
Meningeal branch
Foramen spinosum
Lateral pterygoid muscle and nerve to lateral ptyergoid muscle
Middle meningeal artery
Auriculotemporal nerve
Posterior auricular nerve
Facial nerve (CN VII)
Chorda tympani
Buccal nerve and buccinator muscle (cut)
Lingual nerve
Inferior alveolar nerve (cut)
Submandibular ganglion
Nerve to mylohyoid muscle
Medial pterygoid muscle (cut)
Sublingual gland
Digastric muscle (posterior belly)
Mylohyoid muscle (cut)
Stylohyoid muscle
Hypoglossal nerve (CN XII)
Mental nerve
Submandibular gland
Inferior alveolar nerve (cut)
Digastric muscle (anterior belly)
F. Netter M.D.
Medial view
Motor root
Sensory root
Trigeminal (semilunar) ganglion
Geniculate ganglion
Ophthalmic nerve (CN V_1)
Tympanic membrane
Maxillary nerve (CN V_2)
Chorda tympani
Mandibular nerve (CN V_3)
Facial nerve (CN VII)
Posterior division
Anterior division
Tensor tympani muscle and nerve to tensor tympani muscle
Tensor veli palatini muscle and nerve to tensor veli palatini muscle
Lesser petrosal nerve
Otic ganglion
Auriculotemporal nerve
Chorda tympani
Middle meningeal artery
Medial pterygoid muscle (cut) and nerve to medial pterygoid muscle
Maxillary artery
Pterygoid hamulus
Nerve to mylohyoid muscle
Lingual nerve
Inferior alveolar nerve entering mandibular foramen

Plate 60 Superior View of Infratemporal Fossa

See also **Plates 57-59** (s0290) , **63** (s0320) , **64** (s0325) , **115** (s0610)

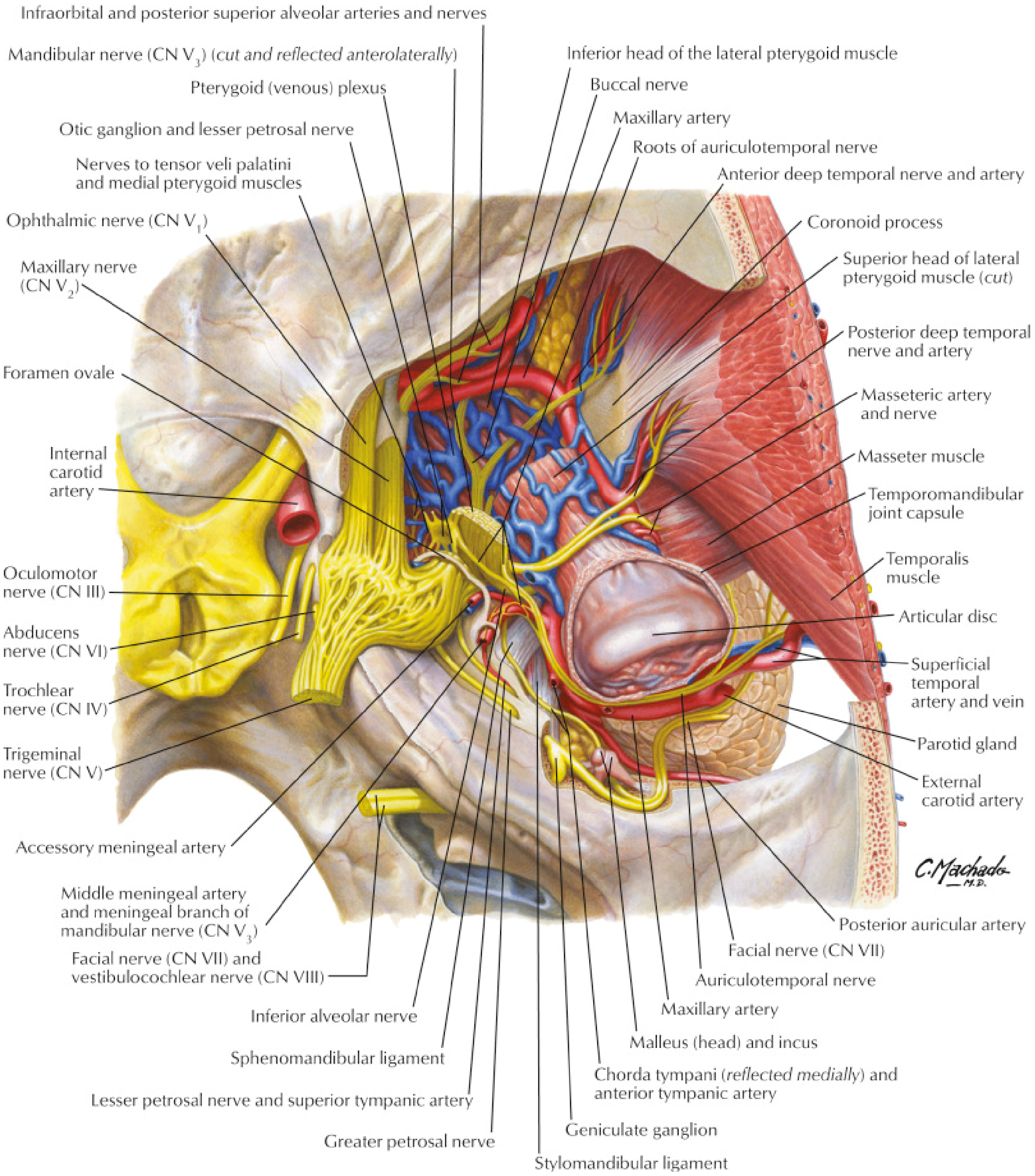

Infraorbital and posterior superior alveolar arteries and nerves
Mandibular nerve (CN V_3) (*cut and reflected anterolaterally*)
Pterygoid (venous) plexus
Otic ganglion and lesser petrosal nerve
Nerves to tensor veli palatini and medial pterygoid muscles
Ophthalmic nerve (CN V_1)
Maxillary nerve (CN V_2)
Foramen ovale
Internal carotid artery
Oculomotor nerve (CN III)
Abducens nerve (CN VI)
Trochlear nerve (CN IV)
Trigeminal nerve (CN V)
Accessory meningeal artery
Middle meningeal artery and meningeal branch of mandibular nerve (CN V_3)
Facial nerve (CN VII) and vestibulocochlear nerve (CN VIII)
Inferior alveolar nerve
Sphenomandibular ligament
Lesser petrosal nerve and superior tympanic artery
Greater petrosal nerve
Stylomandibular ligament
Geniculate ganglion
Chorda tympani (*reflected medially*) and anterior tympanic artery
Malleus (head) and incus
Maxillary artery
Auriculotemporal nerve
Facial nerve (CN VII)
Posterior auricular artery
External carotid artery
Parotid gland
Superficial temporal artery and vein
Articular disc
Temporalis muscle
Temporomandibular joint capsule
Masseter muscle
Masseteric artery and nerve
Posterior deep temporal nerve and artery
Superior head of lateral pterygoid muscle (*cut*)
Coronoid process
Anterior deep temporal nerve and artery
Roots of auriculotemporal nerve
Maxillary artery
Buccal nerve
Inferior head of the lateral pterygoid muscle
C.Machado M.D.

Plate 61 Ophthalmic (CN V_1) and Maxillary (CN V_2) Nerves

See also **Plates 63** (s0320) , **66** (s0335)

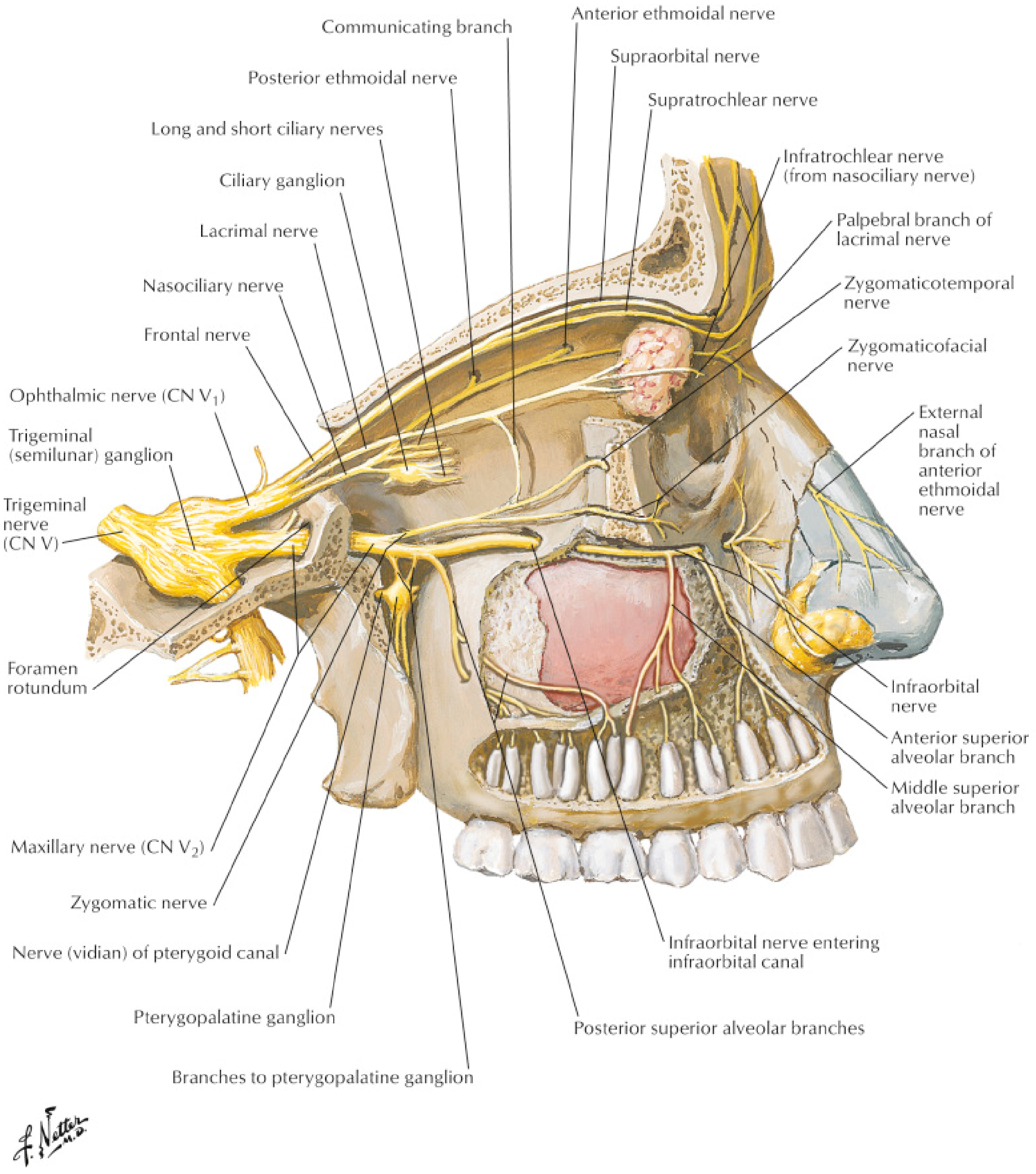

Communicating branch
Anterior ethmoidal nerve
Supraorbital nerve
Supratrochlear nerve
Posterior ethmoidal nerve
Long and short ciliary nerves
Ciliary ganglion
Lacrimal nerve
Nasociliary nerve
Frontal nerve
Ophthalmic nerve (CN V1)
Trigeminal (semilunar) ganglion
Trigeminal nerve (CN V)
Infratrochlear nerve (from nasociliary nerve)
Palpebral branch of lacrimal nerve
Zygomaticotemporal nerve
Zygomaticofacial nerve
External nasal branch of anterior ethmoidal nerve
Foramen rotundum
Infraorbital nerve
Anterior superior alveolar branch
Middle superior alveolar branch
Maxillary nerve (CN V2)
Zygomatic nerve
Nerve (vidian) of pterygoid canal
Infraorbital nerve entering infraorbital canal
Pterygopalatine ganglion
Posterior superior alveolar branches
Branches to pterygopalatine ganglion
F. Netter M.D.

Plate 62 Autonomic Innervation of Nasal Cavity

See also **Plates 133** (s0705) , **142** (s0750) , **144** (s0760)

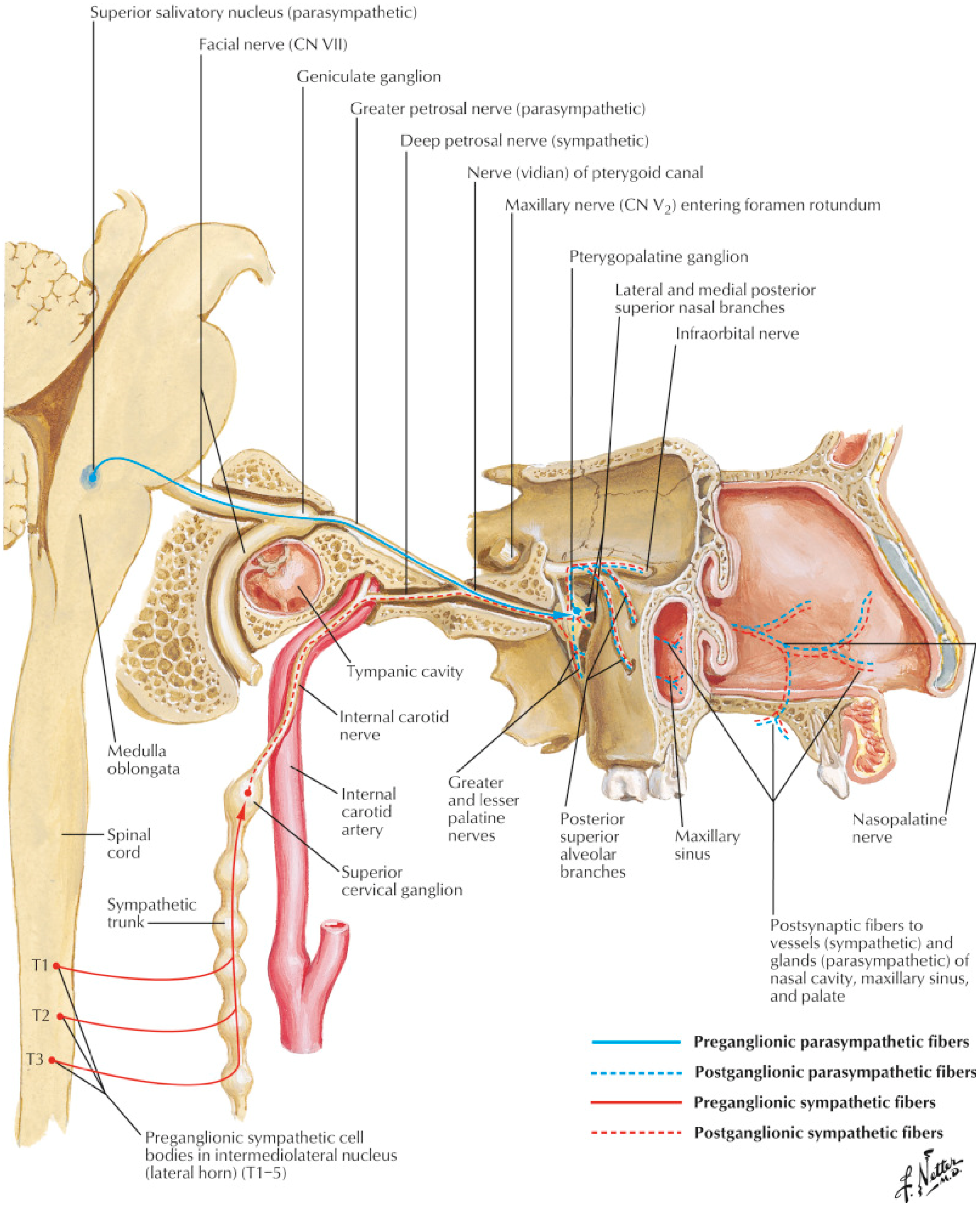
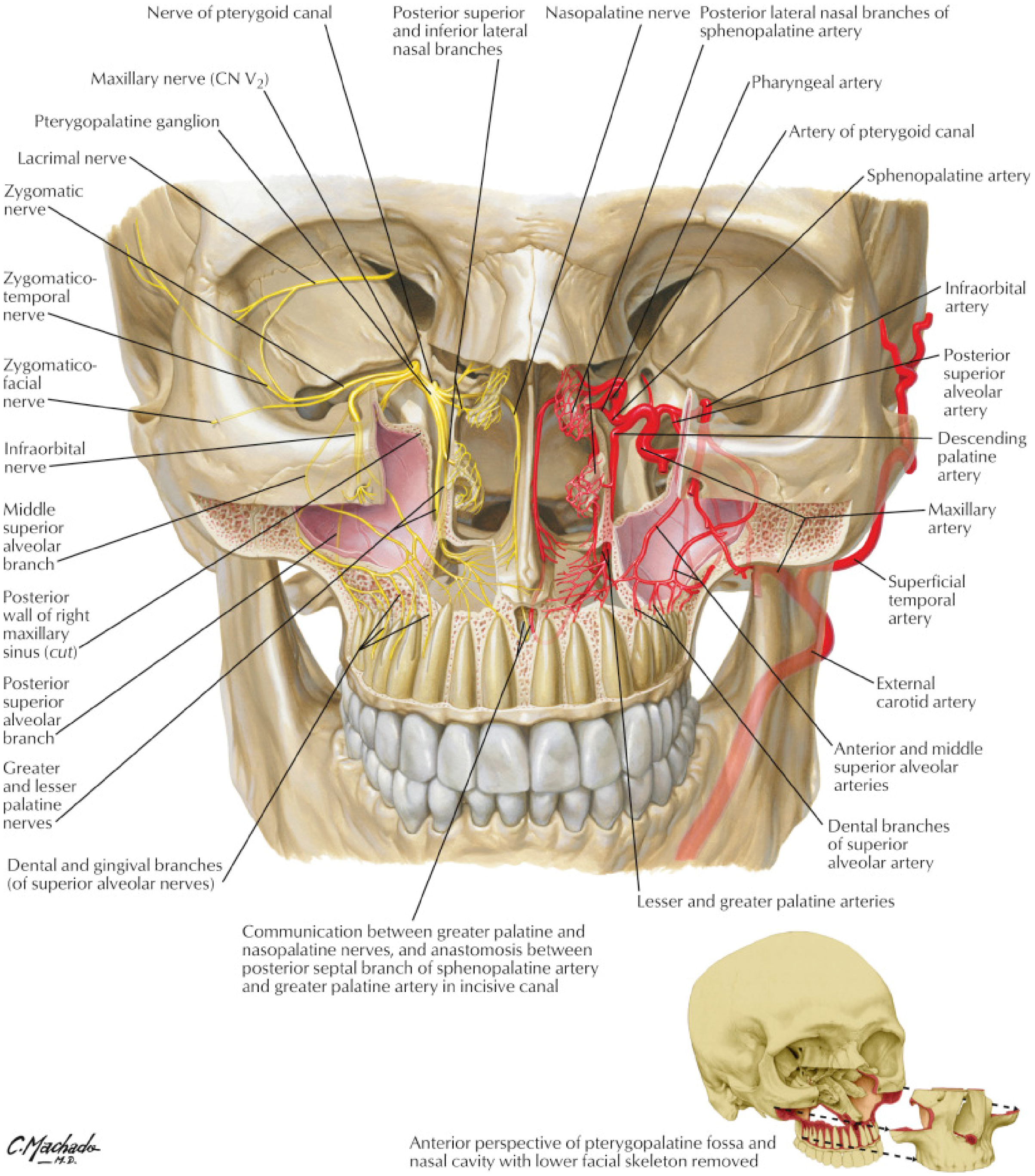

Superior salivatory nucleus (parasympathetic)
Facial nerve (CN VII)
Geniculate ganglion
Greater petrosal nerve (parasympathetic)
Deep petrosal nerve (sympathetic)
Nerve (vidian) of pterygoid canal
Maxillary nerve (CN V2) entering foramen rotundum
Pterygopalatine ganglion
Lateral and medial posterior superior nasal branches
Infraorbital nerve
Tympanic cavity
Internal carotid nerve
Medulla oblongata
Internal carotid artery
Greater and lesser palatine nerves
Posterior superior alveolar branches
Maxillary sinus
Nasopalatine nerve
Spinal cord
Superior cervical ganglion
Sympathetic trunk
Postsynaptic fibers to vessels (sympathetic) and glands (parasympathetic) of nasal cavity, maxillary sinus, and palate
T1
T2
T3
Preganglionic sympathetic cell bodies in intermediolateral nucleus (lateral horn) (T1–5)
Preganglionic parasympathetic fibers
Postganglionic parasympathetic fibers
Preganglionic sympathetic fibers
Postganglionic sympathetic fibers
F. Netter M.D.

Plate 63 Nerves and Arteries of the Deep Face

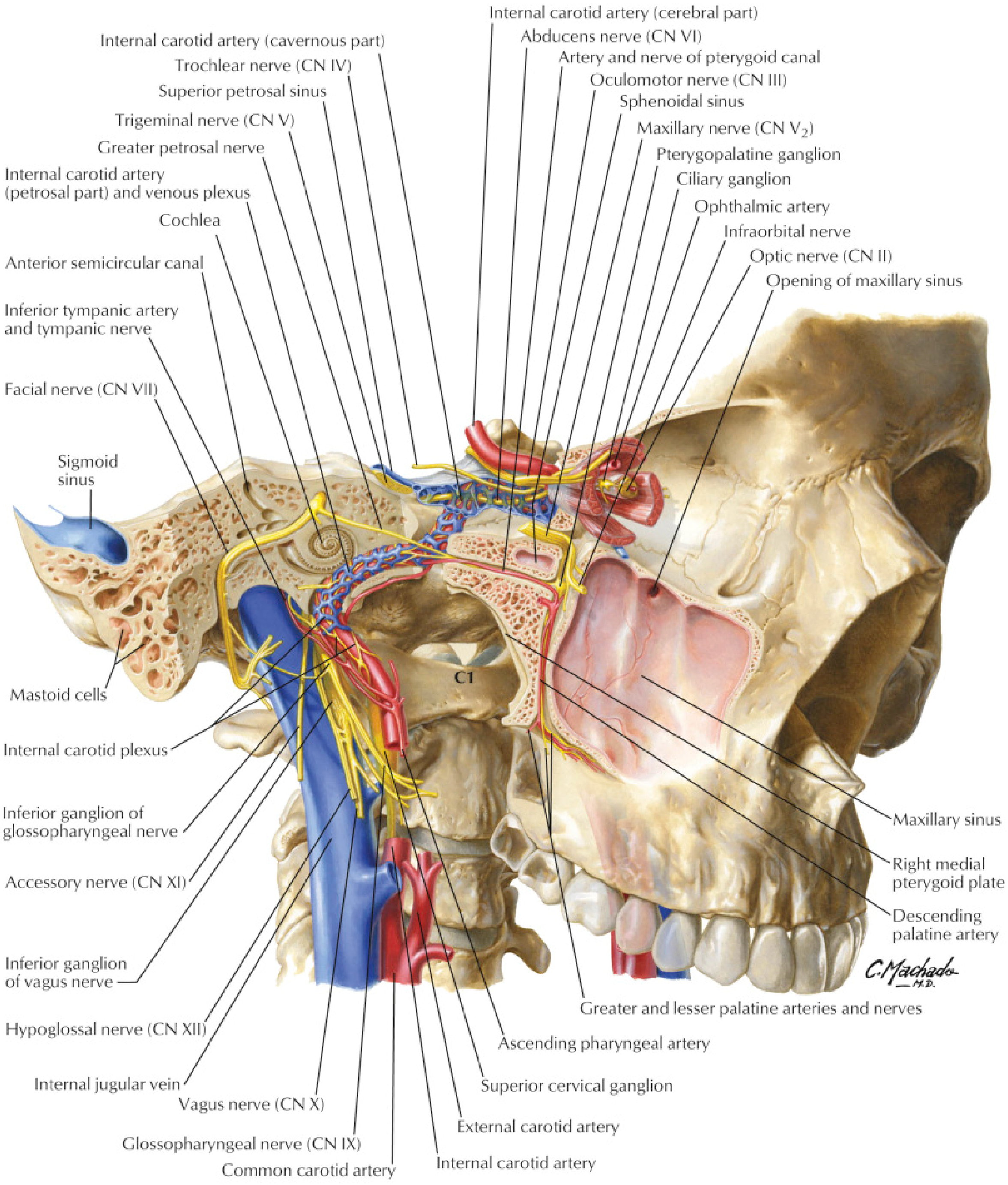
See also **Plates 46** (s0235) , **48** (s0245) , **61** (s0310)


Nerve of pterygoid canal
Posterior superior and inferior lateral nasal branches
Nasopalatine nerve
Posterior lateral nasal branches of sphenopalatine artery
Maxillary nerve (CN V2)
Pharyngeal artery
Pterygopalatine ganglion
Artery of pterygoid canal
Lacrimal nerve
Sphenopalatine artery
Zygomatic nerve
Zygomatico-temporal nerve
Infraorbital artery
Zygomatico-facial nerve
Posterior superior alveolar artery
Descending palatine artery
Infraorbital nerve
Middle superior alveolar branch
Maxillary artery
Posterior wall of right maxillary sinus (cut)
Superficial temporal artery
Posterior superior alveolar branch
External carotid artery
Anterior and middle superior alveolar arteries
Greater and lesser palatine nerves
Dental branches of superior alveolar artery
Dental and gingival branches (of superior alveolar nerves)
Lesser and greater palatine arteries
Communication between greater palatine and nasopalatine nerves, and anastomosis between posterior septal branch of sphenopalatine artery and greater palatine artery in incisive canal
C.Machado M.D.

Anterior perspective of pterygopalatine fossa and nasal cavity with lower facial skeleton removed

Plate 64 Orientation of Nerves and Vessels of the Cranial Base

See also **Plates 115** (s0610) , **142** (s0750) , **147** (s0780)


Internal carotid artery (cavernous part)
Trochlear nerve (CN IV)
Superior petrosal sinus
Trigeminal nerve (CN V)
Greater petrosal nerve
Internal carotid artery (petrosal part) and venous plexus
Cochlea
Anterior semicircular canal
Inferior tympanic artery and tympanic nerve
Facial nerve (CN VII)
Sigmoid sinus
Mastoid cells
Internal carotid plexus
Inferior ganglion of glossopharyngeal nerve
Accessory nerve (CN XI)
Inferior ganglion of vagus nerve
Hypoglossal nerve (CN XII)
Internal jugular vein
Vagus nerve (CN X)
Glossopharyngeal nerve (CN IX)
Common carotid artery
Internal carotid artery (cerebral part)
Abducens nerve (CN VI)
Artery and nerve of pterygoid canal
Oculomotor nerve (CN III)
Sphenoidal sinus
Maxillary nerve (CN V2)
Pterygopalatine ganglion
Ciliary ganglion
Ophthalmic artery
Infraorbital nerve
Optic nerve (CN II)
Opening of maxillary sinus
C1
Maxillary sinus
Right medial pterygoid plate
Descending palatine artery
C.Machado M.D.
Greater and lesser palatine arteries and nerves
Ascending pharyngeal artery
Superior cervical ganglion
External carotid artery
Internal carotid artery

Oral Region

Plate 65 Inspection of Oral Cavity

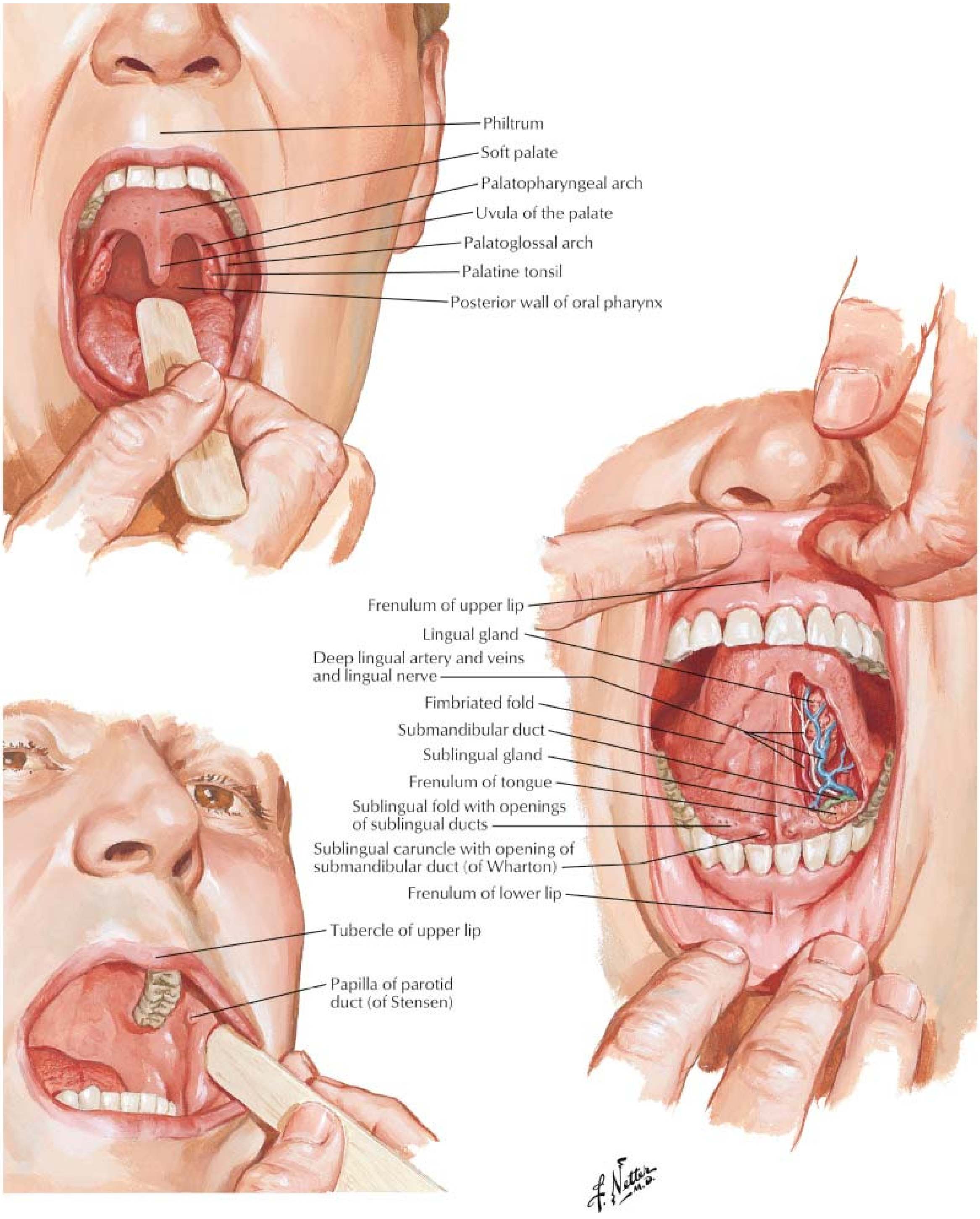

Philtrum
Soft palate
Palatopharyngeal arch
Uvula of the palate
Palatoglossal arch
Palatine tonsil
Posterior wall of oral pharynx
Frenulum of upper lip
Lingual gland
Deep lingual artery and veins and lingual nerve
Fimbriated fold
Submandibular duct
Sublingual gland
Frenulum of tongue
Sublingual fold with openings of sublingual ducts
Sublingual caruncle with opening of submandibular duct (of Wharton)
Frenulum of lower lip
Tubercle of upper lip
Papilla of parotid duct (of Stensen)
F. Netter M.D.

Plate 66 Afferent Innervation of Oral Cavity and Tongue

See also **Plates 144** (s0760) , **146** (s0770)

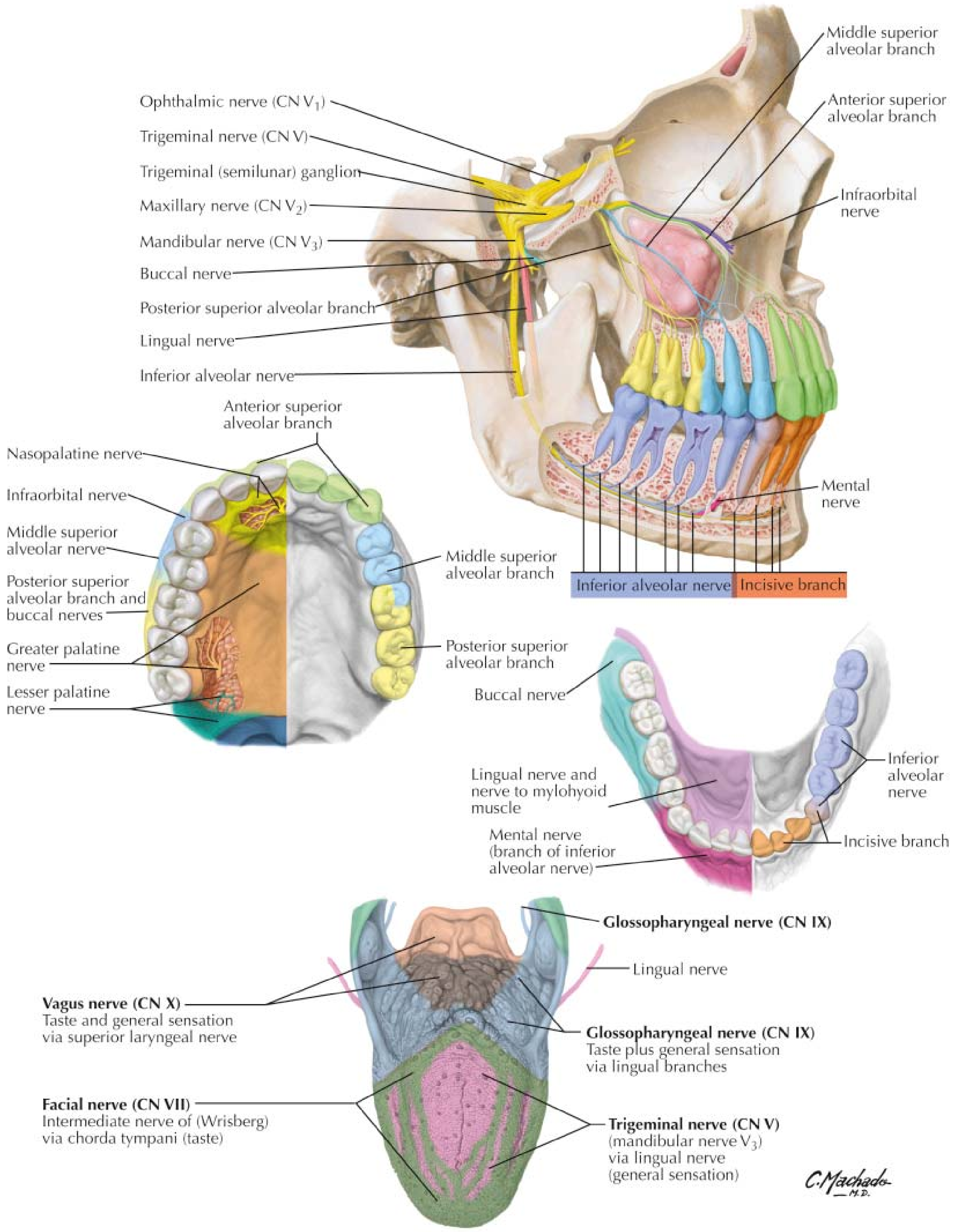

Middle superior alveolar branch
Anterior superior alveolar branch
Ophthalmic nerve (CN V_1)
Trigeminal nerve (CN V)
Trigeminal (semilunar) ganglion
Maxillary nerve (CN V_2)
Mandibular nerve (CN V_3)
Buccal nerve
Posterior superior alveolar branch
Lingual nerve
Inferior alveolar nerve
Infraorbital nerve
Mental nerve
Inferior alveolar nerve
Incisive branch
Anterior superior alveolar branch
Nasopalatine nerve
Infraorbital nerve
Middle superior alveolar nerve
Posterior superior alveolar branch and buccal nerves
Greater palatine nerve
Lesser palatine nerve
Middle superior alveolar branch
Posterior superior alveolar branch
Buccal nerve
Lingual nerve and nerve to mylohyoid muscle
Mental nerve (branch of inferior alveolar nerve)
Inferior alveolar nerve
Incisive branch
Glossopharyngeal nerve (CN IX)
Lingual nerve
Vagus nerve (CN X)
Taste and general sensation via superior laryngeal nerve
Glossopharyngeal nerve (CN IX)
Taste plus general sensation via lingual branches
Facial nerve (CN VII)
Intermediate nerve of (Wrisberg) via chorda tympani (taste)
Trigeminal nerve (CN V)
(mandibular nerve V_3) via lingual nerve (general sensation)
C.Machado M.D.

Plate 67 Roof of Oral Cavity

See also **Plate 48** (s0245)

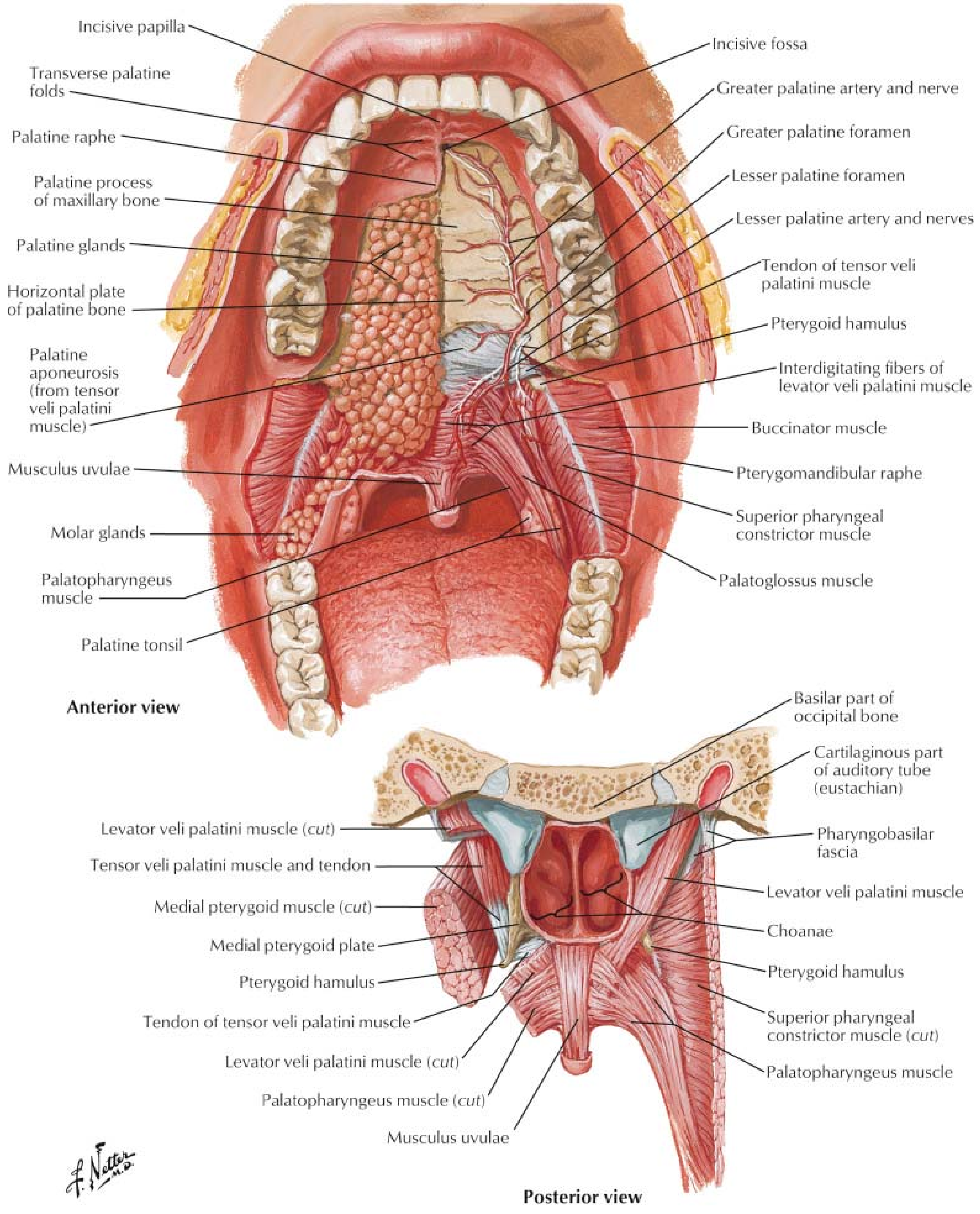
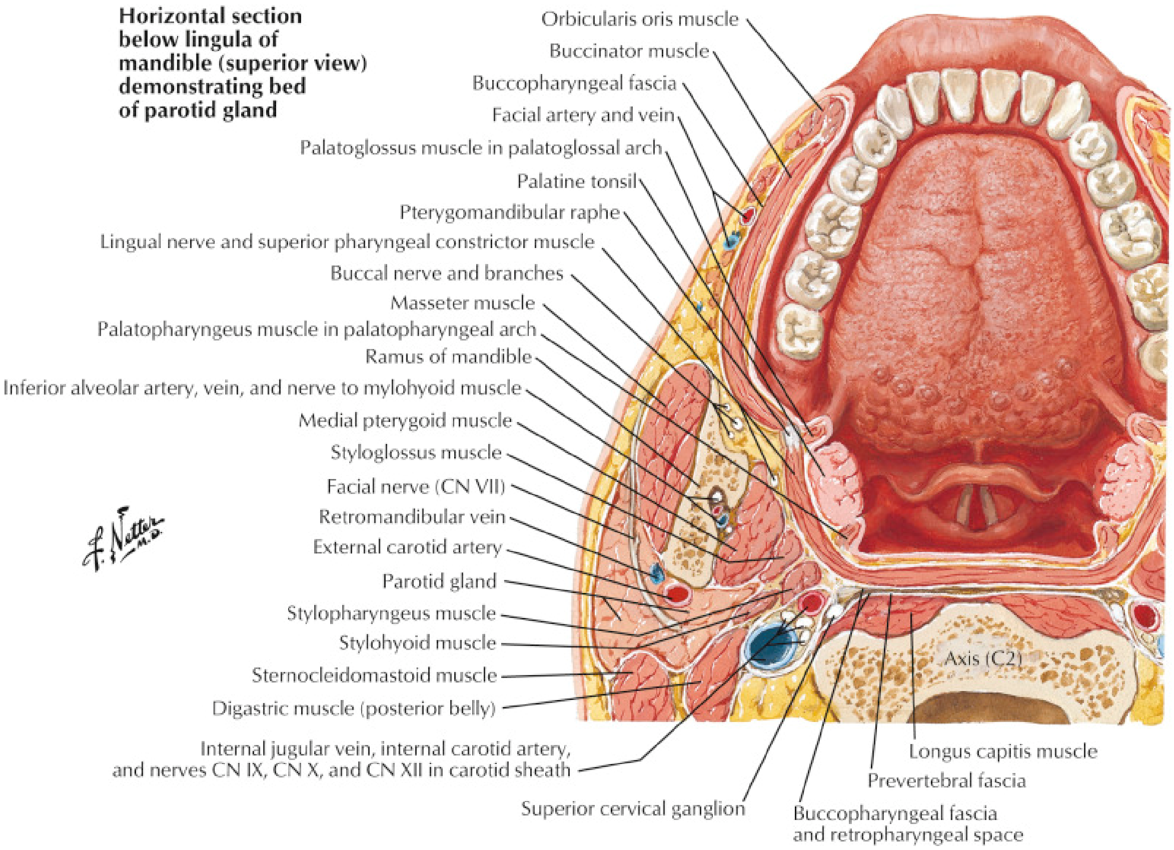
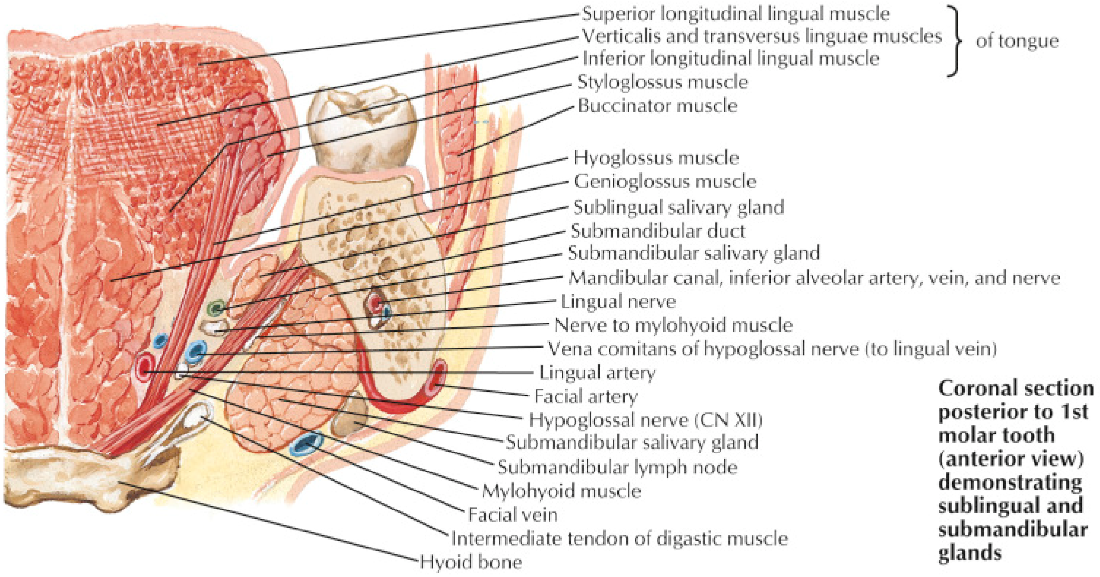

Incisive papilla
Transverse palatine folds
Palatine raphe
Palatine process of maxillary bone
Palatine glands
Horizontal plate of palatine bone
Palatine aponeurosis (from tensor veli palatini muscle)
Musculus uvulae
Molar glands
Palatopharyngeus muscle
Palatine tonsil
Incisive fossa
Greater palatine artery and nerve
Greater palatine foramen
Lesser palatine foramen
Lesser palatine artery and nerves
Tendon of tensor veli palatini muscle
Pterygoid hamulus
Interdigitating fibers of levator veli palatini muscle
Buccinator muscle
Pterygomandibular raphe
Superior pharyngeal constrictor muscle
Palatoglossus muscle
Anterior view
Basilar part of occipital bone
Cartilaginous part of auditory tube (eustachian)
Pharyngobasilar fascia
Levator veli palatini muscle
Choanae
Pterygoid hamulus
Superior pharyngeal constrictor muscle (cut)
Palatopharyngeus muscle
Levator veli palatini muscle (cut)
Tensor veli palatini muscle and tendon
Medial pterygoid muscle (cut)
Medial pterygoid plate
Pterygoid hamulus
Tendon of tensor veli palatini muscle
Levator veli palatini muscle (cut)
Palatopharyngeus muscle (cut)
Musculus uvulae
Posterior view

Plate 68 Tongue and Salivary Glands: Sections



Horizontal section below lingula of mandible (superior view) demonstrating bed of parotid gland

Orbicularis oris muscle
Buccinator muscle
Buccopharyngeal fascia
Facial artery and vein
Palatoglossus muscle in palatoglossal arch
Palatine tonsil
Pterygomandibular raphe
Lingual nerve and superior pharyngeal constrictor muscle
Buccal nerve and branches
Masseter muscle
Palatopharyngeus muscle in palatopharyngeal arch
Ramus of mandible
Inferior alveolar artery, vein, and nerve to mylohyoid muscle
Medial pterygoid muscle
Styloglossus muscle
Facial nerve (CN VII)
Retromandibular vein
External carotid artery
Parotid gland
Stylopharyngeus muscle
Stylohyoid muscle
Sternocleidomastoid muscle
Digastric muscle (posterior belly)
Internal jugular vein, internal carotid artery, and nerves CN IX, CN X, and CN XII in carotid sheath
Superior cervical ganglion
Axis (C2)
Longus capitis muscle
Prevertebral fascia
Buccopharyngeal fascia and retropharyngeal space



Coronal section posterior to 1st molar tooth (anterior view) demonstrating sublingual and submandibular glands

Superior longitudinal lingual muscle
Verticalis and transversus linguae muscles
Inferior longitudinal lingual muscle
of tongue
Styloglossus muscle
Buccinator muscle
Hyoglossus muscle
Genioglossus muscle
Sublingual salivary gland
Submandibular duct
Submandibular salivary gland
Mandibular canal, inferior alveolar artery, vein, and nerve
Lingual nerve
Nerve to mylohyoid muscle
Vena comitans of hypoglossal nerve (to lingual vein)
Lingual artery
Facial artery
Hypoglossal nerve (CN XII)
Submandibular salivary gland
Submandibular lymph node
Mylohyoid muscle
Facial vein
Intermediate tendon of digastic muscle
Hyoid bone

Plate 69 Floor of Oral Cavity

See also **Plate 35** (s0175)

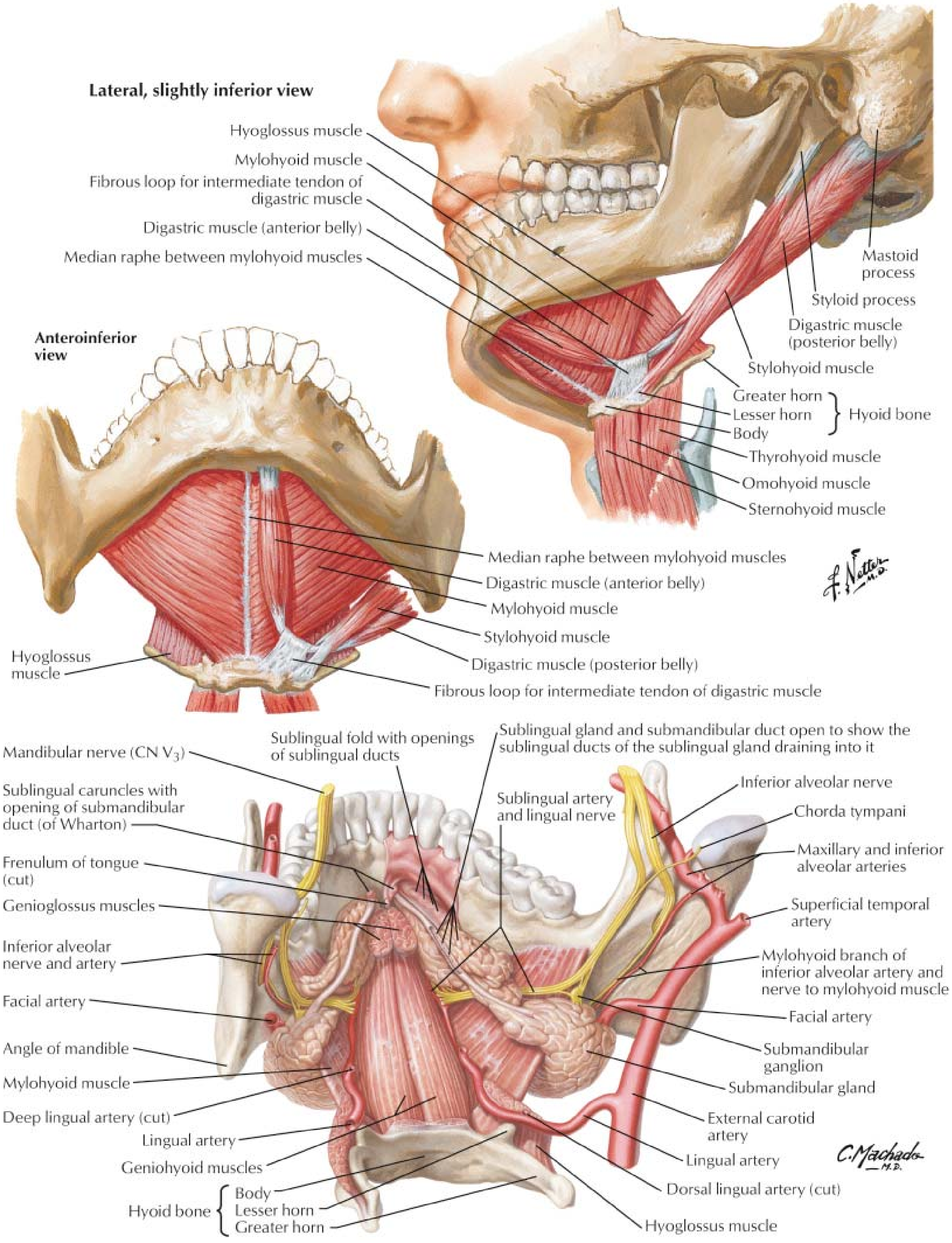
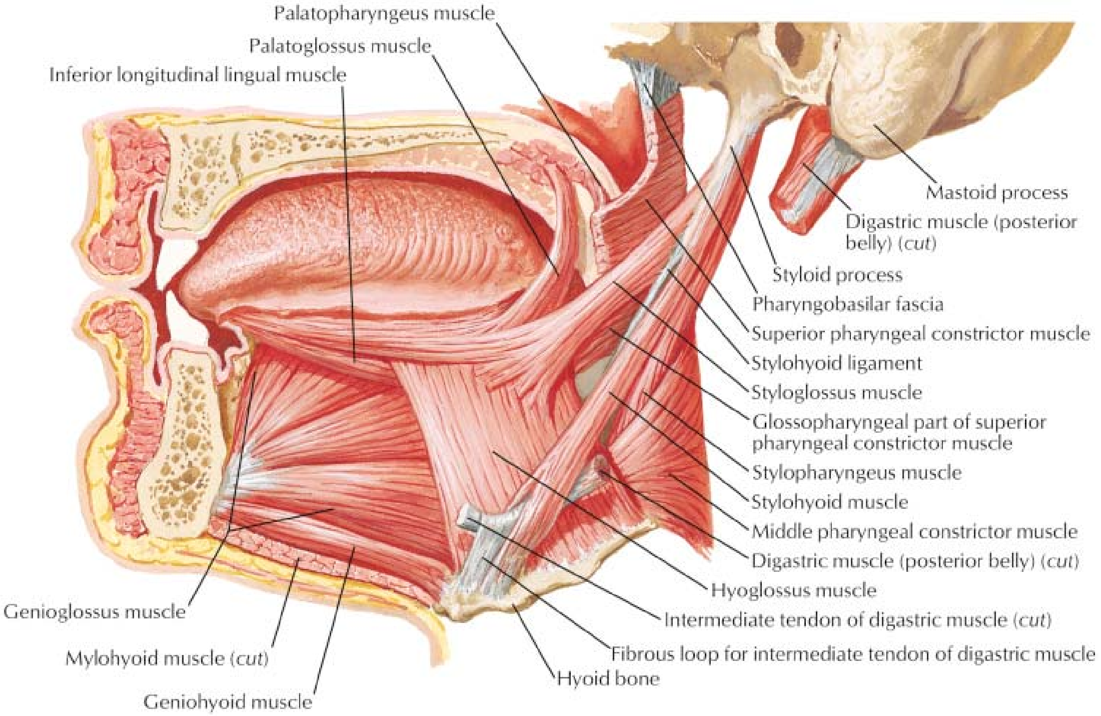

Lateral, slightly inferior view
Hyoglossus muscle
Mylohyoid muscle
Fibrous loop for intermediate tendon of digastric muscle
Digastric muscle (anterior belly)
Median raphe between mylohyoid muscles
Mastoid process
Styloid process
Digastric muscle (posterior belly)
Stylohyoid muscle
Greater horn
Lesser horn
Body
Hyoid bone
Thyrohyoid muscle
Omohyoid muscle
Sternohyoid muscle
Anteroinferior view
Median raphe between mylohyoid muscles
Digastric muscle (anterior belly)
Mylohyoid muscle
Stylohyoid muscle
Digastric muscle (posterior belly)
Fibrous loop for intermediate tendon of digastric muscle
Hyoglossus muscle
F. Netter M.D.
Mandibular nerve (CN V3)
Sublingual fold with openings of sublingual ducts
Sublingual gland and submandibular duct open to show the sublingual ducts of the sublingual gland draining into it
Sublingual caruncles with opening of submandibular duct (of Wharton)
Frenulum of tongue (cut)
Genioglossus muscles
Inferior alveolar nerve and artery
Facial artery
Angle of mandible
Mylohyoid muscle
Deep lingual artery (cut)
Lingual artery
Geniohyoid muscles
Hyoid bone
Body
Lesser horn
Greater horn
Sublingual artery and lingual nerve
Inferior alveolar nerve
Chorda tympani
Maxillary and inferior alveolar arteries
Superficial temporal artery
Mylohyoid branch of inferior alveolar artery and nerve to mylohyoid muscle
Facial artery
Submandibular ganglion
Submandibular gland
External carotid artery
Lingual artery
Dorsal lingual artery (cut)
Hyoglossus muscle
C. Machado M.D.

Plate 70 Tongue

See also **Plates 69** (s0355) , **139** (s0735)


Palatopharyngeus muscle
Palatoglossus muscle
Inferior longitudinal lingual muscle
Mastoid process
Digastric muscle (posterior belly) (*cut*)
Styloid process
Pharyngobasilar fascia
Superior pharyngeal constrictor muscle
Stylohyoid ligament
Styloglossus muscle
Glossopharyngeal part of superior pharyngeal constrictor muscle
Stylopharyngeus muscle
Stylohyoid muscle
Middle pharyngeal constrictor muscle
Digastric muscle (posterior belly) (*cut*)
Hyoglossus muscle
Intermediate tendon of digastric muscle (*cut*)
Fibrous loop for intermediate tendon of digastric muscle
Hyoid bone
Genioglossus muscle
Mylohyoid muscle (*cut*)
Geniohyoid muscle

Lateral view (left side of mandible removed)

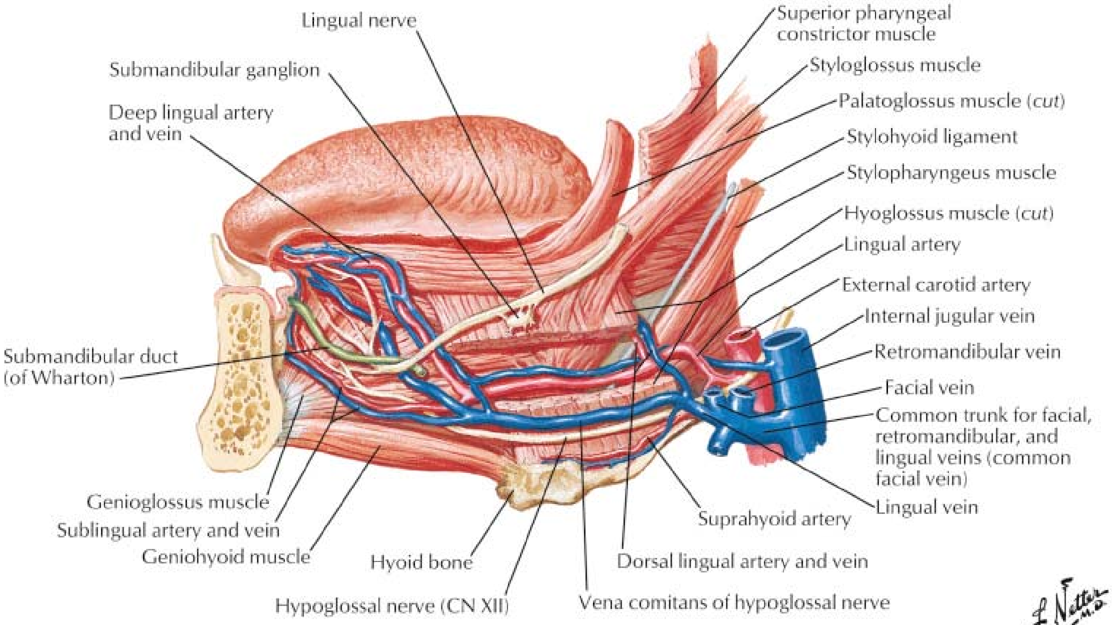
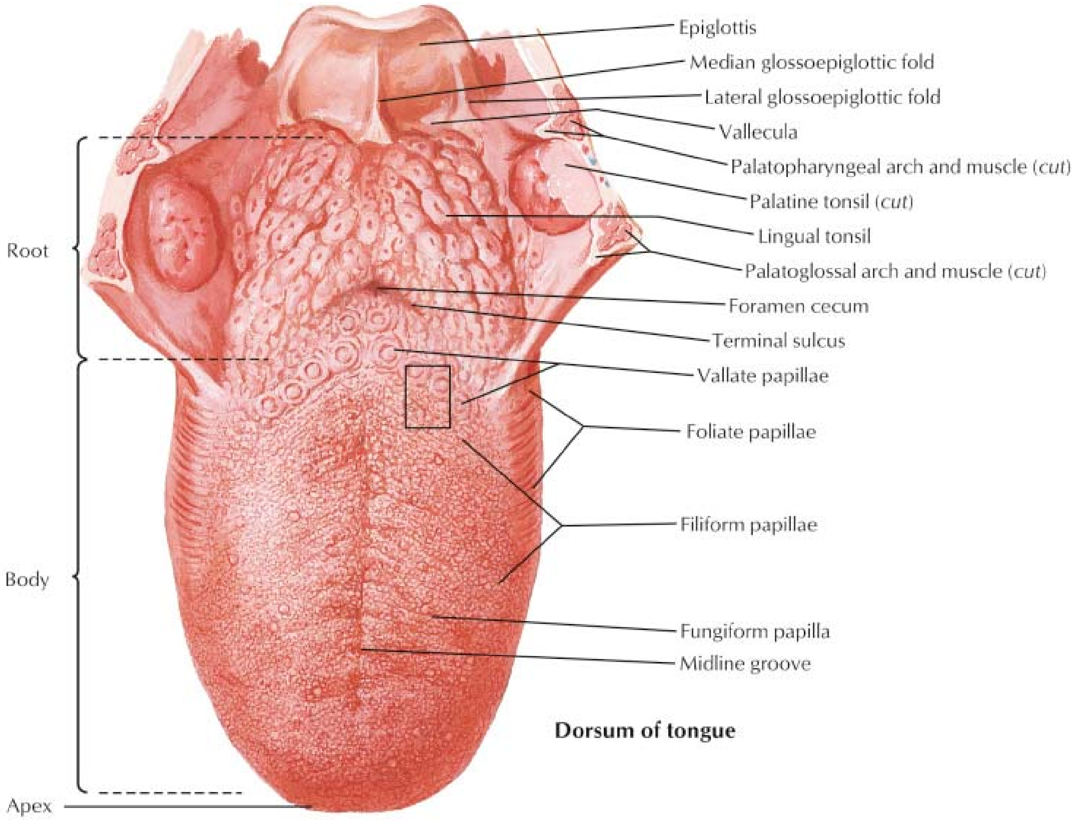
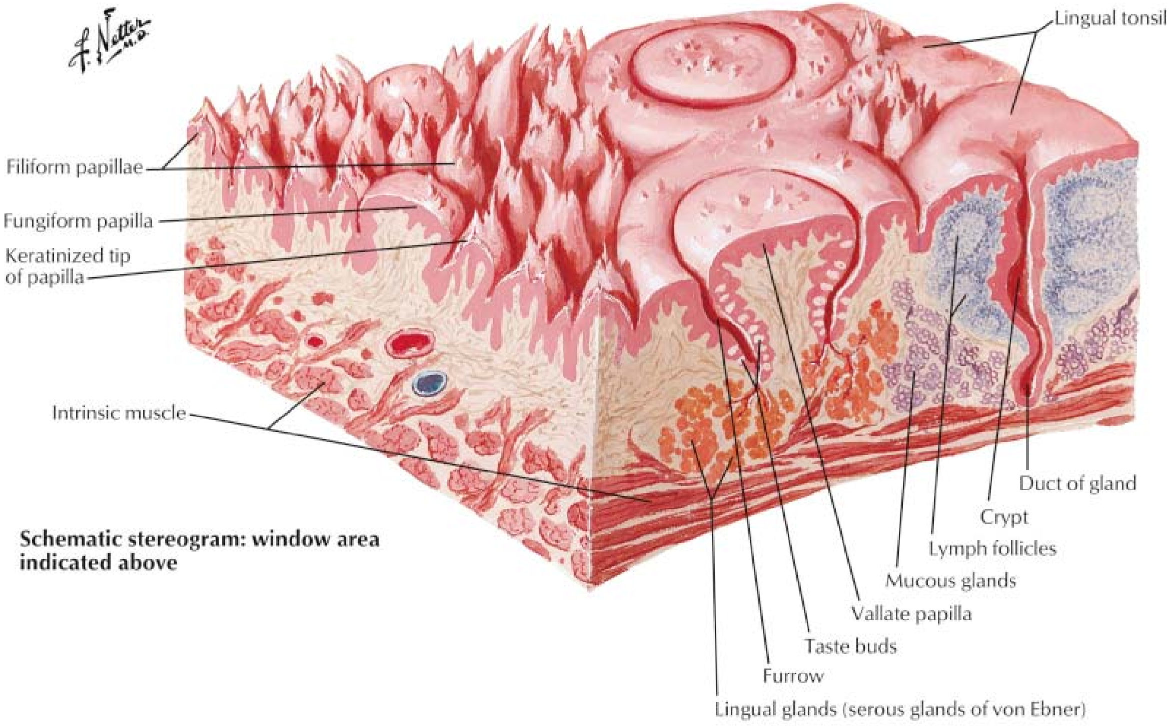

Lingual nerve
Submandibular ganglion
Deep lingual artery and vein
Submandibular duct (of Wharton)
Superior pharyngeal constrictor muscle
Styloglossus muscle
Palatoglossus muscle (*cut*)
Stylohyoid ligament
Stylopharyngeus muscle
Hyoglossus muscle (*cut*)
Lingual artery
External carotid artery
Internal jugular vein
Retromandibular vein
Facial vein
Common trunk for facial, retromandibular, and lingual veins (common facial vein)
Lingual vein
Suprahyoid artery
Genioglossus muscle
Sublingual artery and vein
Geniohyoid muscle
Hyoid bone
Hypoglossal nerve (CN XII)
Dorsal lingual artery and vein
Vena comitans of hypoglossal nerve
F. Netter M.D.

Plate 71 Tongue (continued)

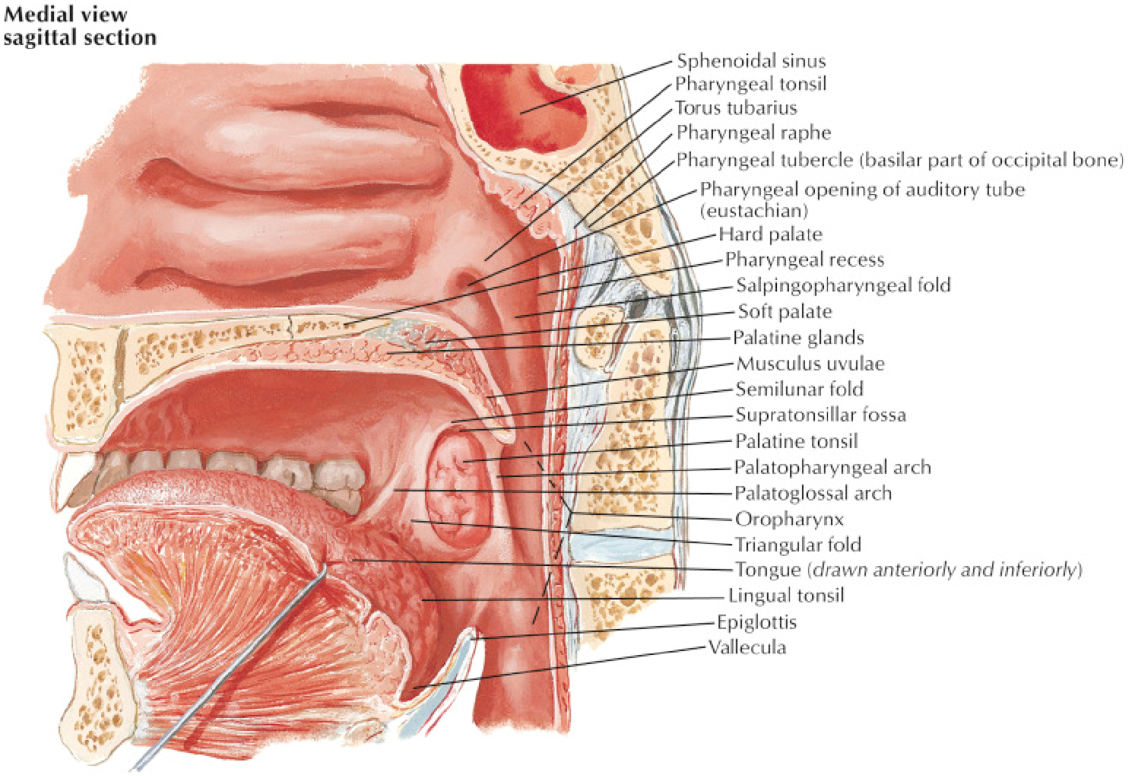

Epiglottis
Median glossoepiglottic fold
Lateral glossoepiglottic fold
Vallecula
Palatopharyngeal arch and muscle (*cut*)
Palatine tonsil (*cut*)
Lingual tonsil
Palatoglossal arch and muscle (*cut*)
Foramen cecum
Terminal sulcus
Vallate papillae
Foliate papillae
Filiform papillae
Fungiform papilla
Midline groove
Root
Body
Apex

Dorsum of tongue


Lingual tonsil
Filiform papillae
Fungiform papilla
Keratinized tip of papilla
Intrinsic muscle
Duct of gland
Crypt
Lymph follicles
Mucous glands
Vallate papilla
Taste buds
Furrow
Lingual glands (serous glands of von Ebner)

Schematic stereogram: window area indicated above

Plate 72 Fauces


Medial view
sagittal section
Sphenoidal sinus
Pharyngeal tonsil
Torus tubarius
Pharyngeal raphe
Pharyngeal tubercle (basilar part of occipital bone)
Pharyngeal opening of auditory tube (eustachian)
Hard palate
Pharyngeal recess
Salpingopharyngeal fold
Soft palate
Palatine glands
Musculus uvulae
Semilunar fold
Supratonsillar fossa
Palatine tonsil
Palatopharyngeal arch
Palatoglossal arch
Oropharynx
Triangular fold
Tongue (*drawn anteriorly and inferiorly*)
Lingual tonsil
Epiglottis
Vallecula

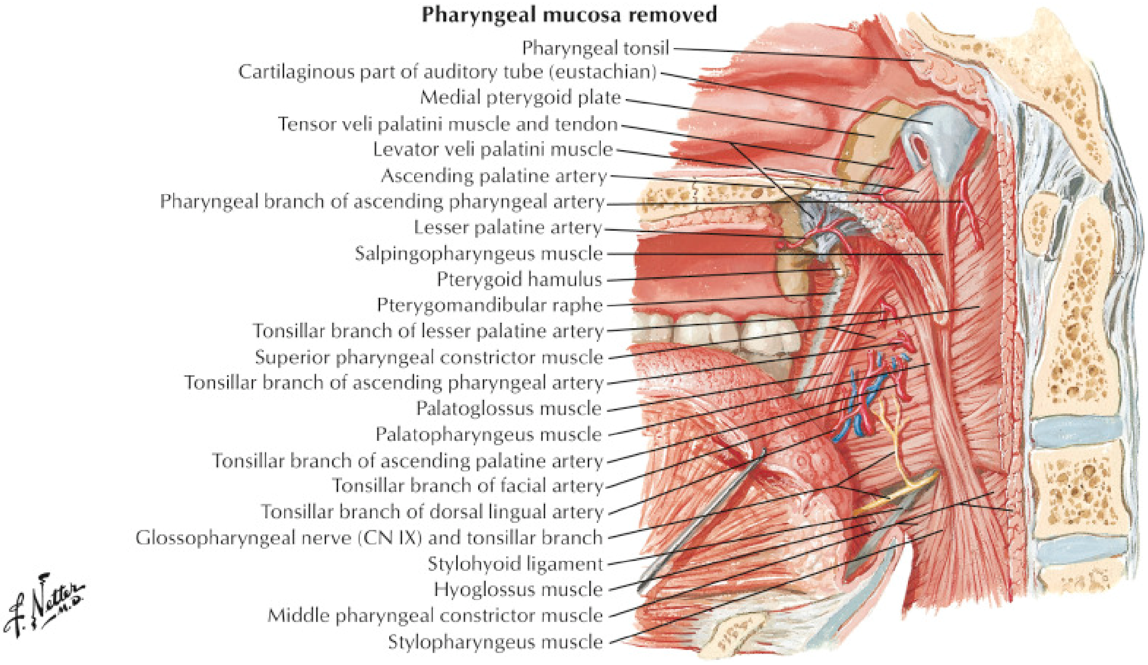
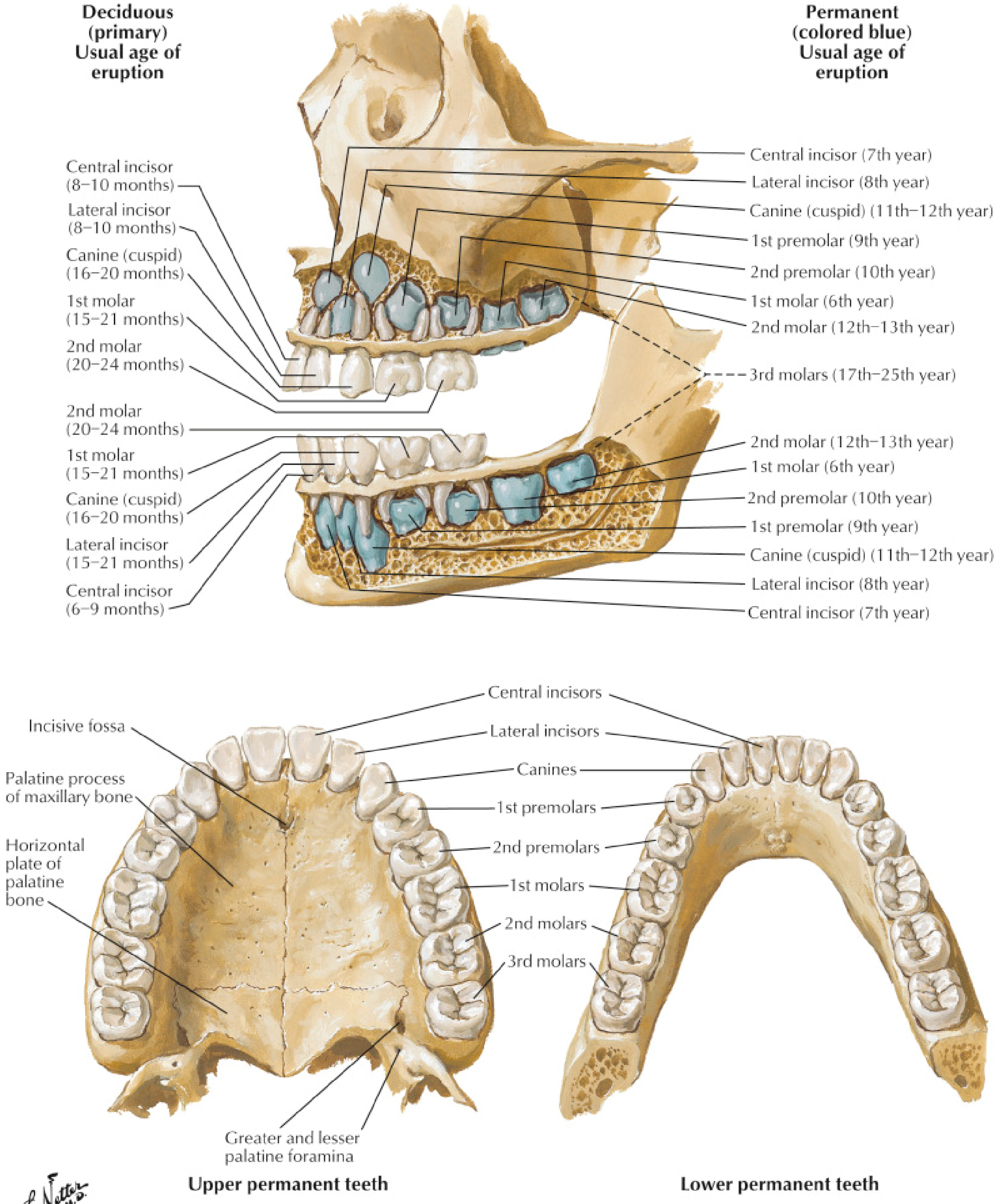

Pharyngeal mucosa removed
Pharyngeal tonsil
Cartilaginous part of auditory tube (eustachian)
Medial pterygoid plate
Tensor veli palatini muscle and tendon
Levator veli palatini muscle
Ascending palatine artery
Pharyngeal branch of ascending pharyngeal artery
Lesser palatine artery
Salpingopharyngeus muscle
Pterygoid hamulus
Pterygomandibular raphe
Tonsillar branch of lesser palatine artery
Superior pharyngeal constrictor muscle
Tonsillar branch of ascending pharyngeal artery
Palatoglossus muscle
Palatopharyngeus muscle
Tonsillar branch of ascending palatine artery
Tonsillar branch of facial artery
Tonsillar branch of dorsal lingual artery
Glossopharyngeal nerve (CN IX) and tonsillar branch
Stylohyoid ligament
Hyoglossus muscle
Middle pharyngeal constrictor muscle
Stylopharyngeus muscle
F. Netter M.D.

Plate 73 Teeth

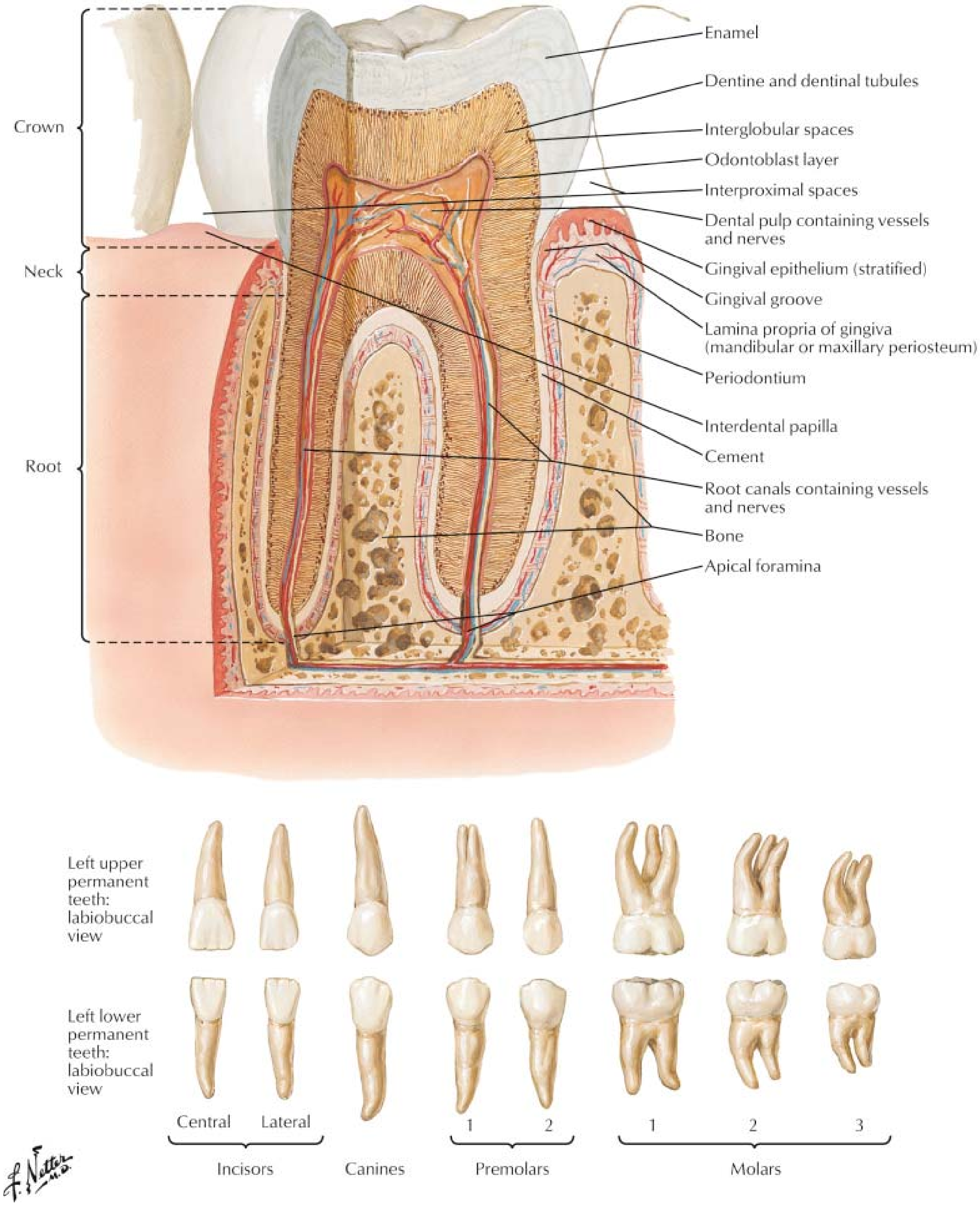
See also **Plate 67** (s0345)


Deciduous (primary) Usual age of eruption
Permanent (colored blue) Usual age of eruption
Central incisor (8–10 months)
Lateral incisor (8–10 months)
Canine (cuspid) (16–20 months)
1st molar (15–21 months)
2nd molar (20–24 months)
Central incisor (7th year)
Lateral incisor (8th year)
Canine (cuspid) (11th–12th year)
1st premolar (9th year)
2nd premolar (10th year)
1st molar (6th year)
2nd molar (12th–13th year)
3rd molars (17th–25th year)
2nd molar (20–24 months)
1st molar (15–21 months)
Canine (cuspid) (16–20 months)
Lateral incisor (15–21 months)
Central incisor (6–9 months)
2nd molar (12th–13th year)
1st molar (6th year)
2nd premolar (10th year)
1st premolar (9th year)
Canine (cuspid) (11th–12th year)
Lateral incisor (8th year)
Central incisor (7th year)
Incisive fossa
Palatine process of maxillary bone
Horizontal plate of palatine bone
Central incisors
Lateral incisors
Canines
1st premolars
2nd premolars
1st molars
2nd molars
3rd molars
Greater and lesser palatine foramina

Upper permanent teeth

Lower permanent teeth

Plate 74 Teeth (continued)


Crown
Neck
Root
Enamel
Dentine and dentinal tubules
Interglobular spaces
Odontoblast layer
Interproximal spaces
Dental pulp containing vessels and nerves
Gingival epithelium (stratified)
Gingival groove
Lamina propria of gingiva (mandibular or maxillary periosteum)
Periodontium
Interdental papilla
Cement
Root canals containing vessels and nerves
Bone
Apical foramina
Left upper permanent teeth: labiobuccal view
Left lower permanent teeth: labiobuccal view
Central
Lateral
Incisors
Canines
1
2
Premolars
1
2
3
Molars
F. Netter M.D.

Pharynx

Plate 75 Muscles of Pharynx: Partially Opened Posterior View

See also **Plates 76** (s0395) , **81** (s0420)

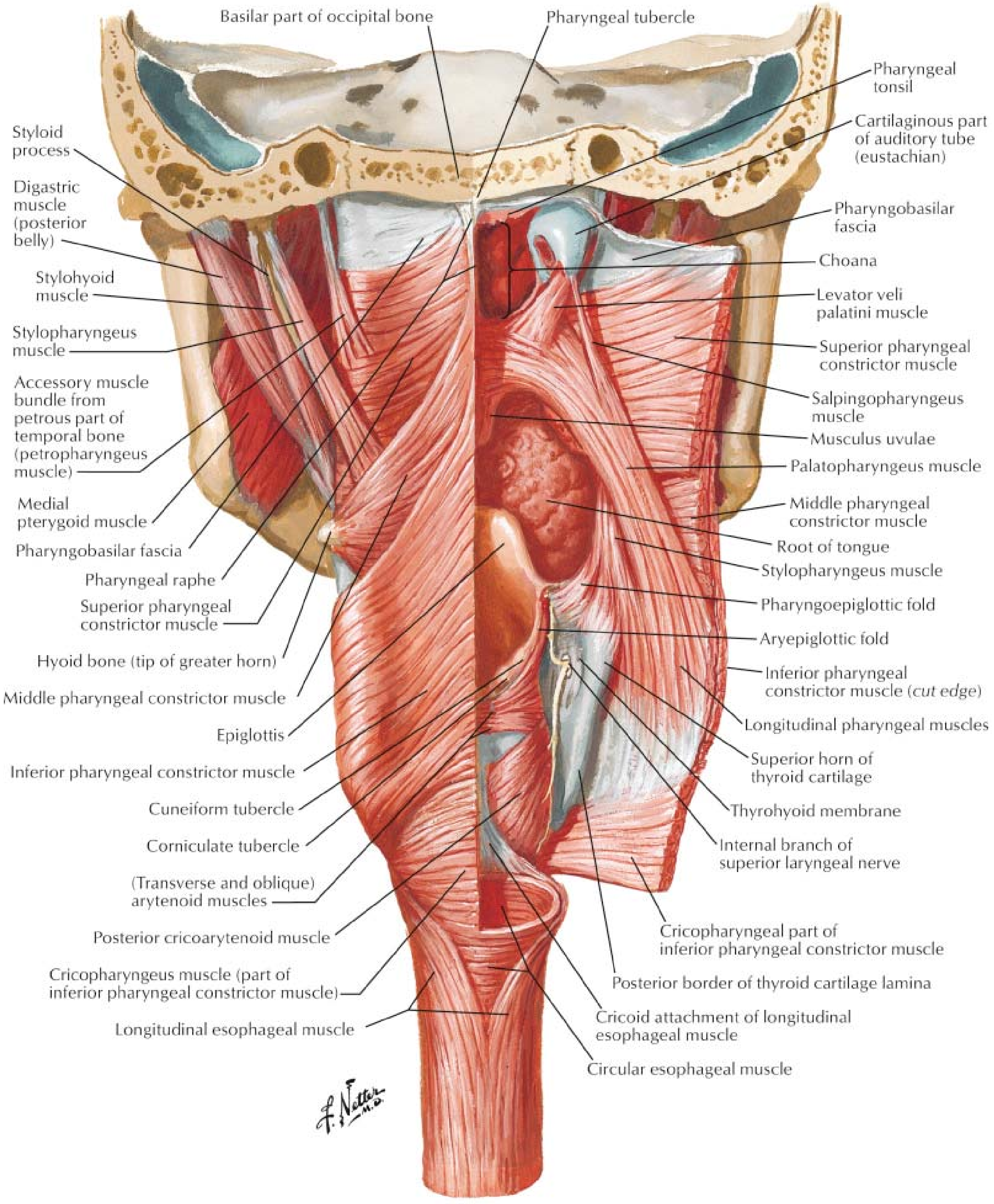

Basilar part of occipital bone
Pharyngeal tubercle
Pharyngeal tonsil
Cartilaginous part of auditory tube (eustachian)
Pharyngobasilar fascia
Choana
Levator veli palatini muscle
Superior pharyngeal constrictor muscle
Salpingopharyngeus muscle
Musculus uvulae
Palatopharyngeus muscle
Middle pharyngeal constrictor muscle
Root of tongue
Stylopharyngeus muscle
Pharyngoepiglottic fold
Aryepiglottic fold
Inferior pharyngeal constrictor muscle (*cut edge*)
Longitudinal pharyngeal muscles
Superior horn of thyroid cartilage
Thyrohyoid membrane
Internal branch of superior laryngeal nerve
Cricopharyngeal part of inferior pharyngeal constrictor muscle
Posterior border of thyroid cartilage lamina
Cricoid attachment of longitudinal esophageal muscle
Circular esophageal muscle
Styloid process
Digastric muscle (posterior belly)
Stylohyoid muscle
Stylopharyngeus muscle
Accessory muscle bundle from petrous part of temporal bone (petropharyngeus muscle)
Medial pterygoid muscle
Pharyngobasilar fascia
Pharyngeal raphe
Superior pharyngeal constrictor muscle
Hyoid bone (tip of greater horn)
Middle pharyngeal constrictor muscle
Epiglottis
Inferior pharyngeal constrictor muscle
Cuneiform tubercle
Corniculate tubercle
(Transverse and oblique) arytenoid muscles
Posterior cricoarytenoid muscle
Cricopharyngeus muscle (part of inferior pharyngeal constrictor muscle)
Longitudinal esophageal muscle

Plate 76 Posterior View of Pharynx: Nerves and Vessels

See also **Plates 75** (s0390) , **79** (s0410) , **82** (s0425) , **83** (s0430)

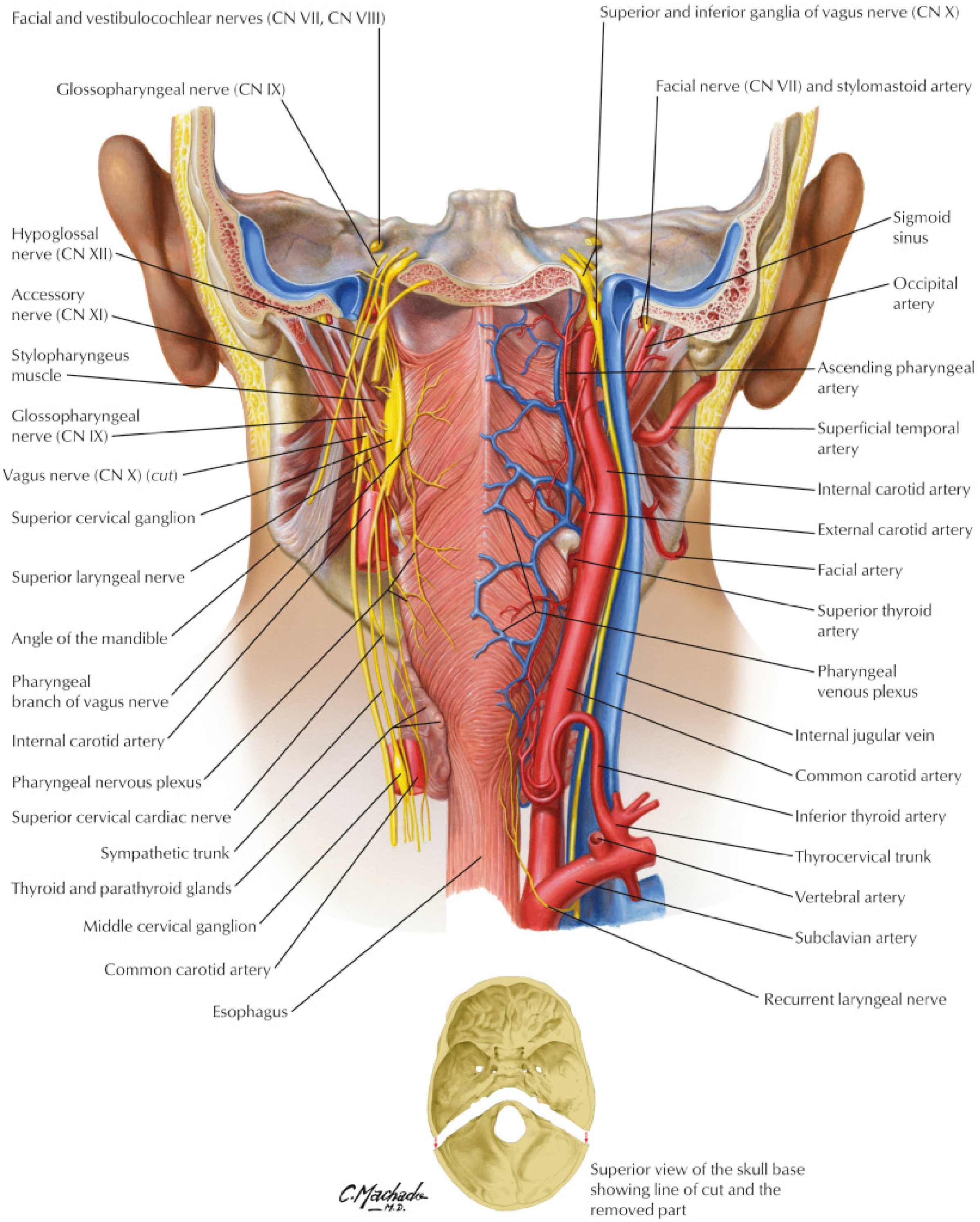

Facial and vestibulocochlear nerves (CN VII, CN VIII)
Glossopharyngeal nerve (CN IX)
Hypoglossal nerve (CN XII)
Accessory nerve (CN XI)
Stylopharyngeus muscle
Glossopharyngeal nerve (CN IX)
Vagus nerve (CN X) (*cut*)
Superior cervical ganglion
Superior laryngeal nerve
Angle of the mandible
Pharyngeal branch of vagus nerve
Internal carotid artery
Pharyngeal nervous plexus
Superior cervical cardiac nerve
Sympathetic trunk
Thyroid and parathyroid glands
Middle cervical ganglion
Common carotid artery
Esophagus
Superior and inferior ganglia of vagus nerve (CN X)
Facial nerve (CN VII) and stylomastoid artery
Sigmoid sinus
Occipital artery
Ascending pharyngeal artery
Superficial temporal artery
Internal carotid artery
External carotid artery
Facial artery
Superior thyroid artery
Pharyngeal venous plexus
Internal jugular vein
Common carotid artery
Inferior thyroid artery
Thyrocervical trunk
Vertebral artery
Subclavian artery
Recurrent laryngeal nerve
Superior view of the skull base showing line of cut and the removed part
C. Machado M.D.

Plate 77 Pharynx: Medial View

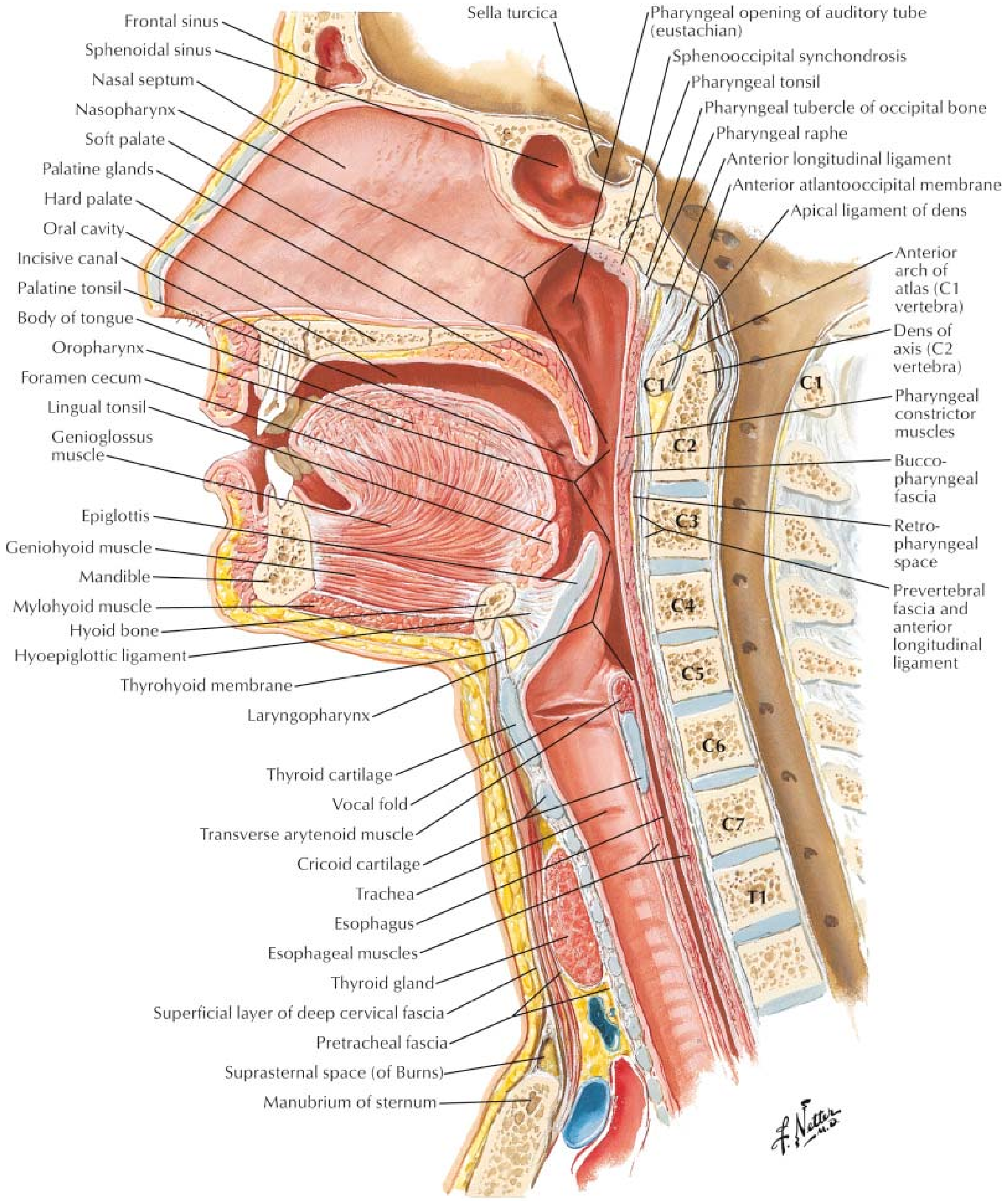

Frontal sinus
Sphenoidal sinus
Nasal septum
Nasopharynx
Soft palate
Palatine glands
Hard palate
Oral cavity
Incisive canal
Palatine tonsil
Body of tongue
Oropharynx
Foramen cecum
Lingual tonsil
Genioglossus muscle
Epiglottis
Geniohyoid muscle
Mandible
Mylohyoid muscle
Hyoid bone
Hyoepiglottic ligament
Thyrohyoid membrane
Laryngopharynx
Sella turcica
Pharyngeal opening of auditory tube (eustachian)
Sphenooccipital synchondrosis
Pharyngeal tonsil
Pharyngeal tubercle of occipital bone
Pharyngeal raphe
Anterior longitudinal ligament
Anterior atlantooccipital membrane
Apical ligament of dens
Anterior arch of atlas (C1 vertebra)
Dens of axis (C2 vertebra)
Pharyngeal constrictor muscles
Bucco-pharyngeal fascia
Retro-pharyngeal space
Prevertebral fascia and anterior longitudinal ligament
C1
C1
C2
C3
C4
C5
C6
C7
T1
Thyroid cartilage
Vocal fold
Transverse arytenoid muscle
Cricoid cartilage
Trachea
Esophagus
Esophageal muscles
Thyroid gland
Superficial layer of deep cervical fascia
Pretracheal fascia
Suprasternal space (of Burns)
Manubrium of sternum

Plate 78 Muscles of Pharynx: Medial View

See also **Plate 72** (s0370)

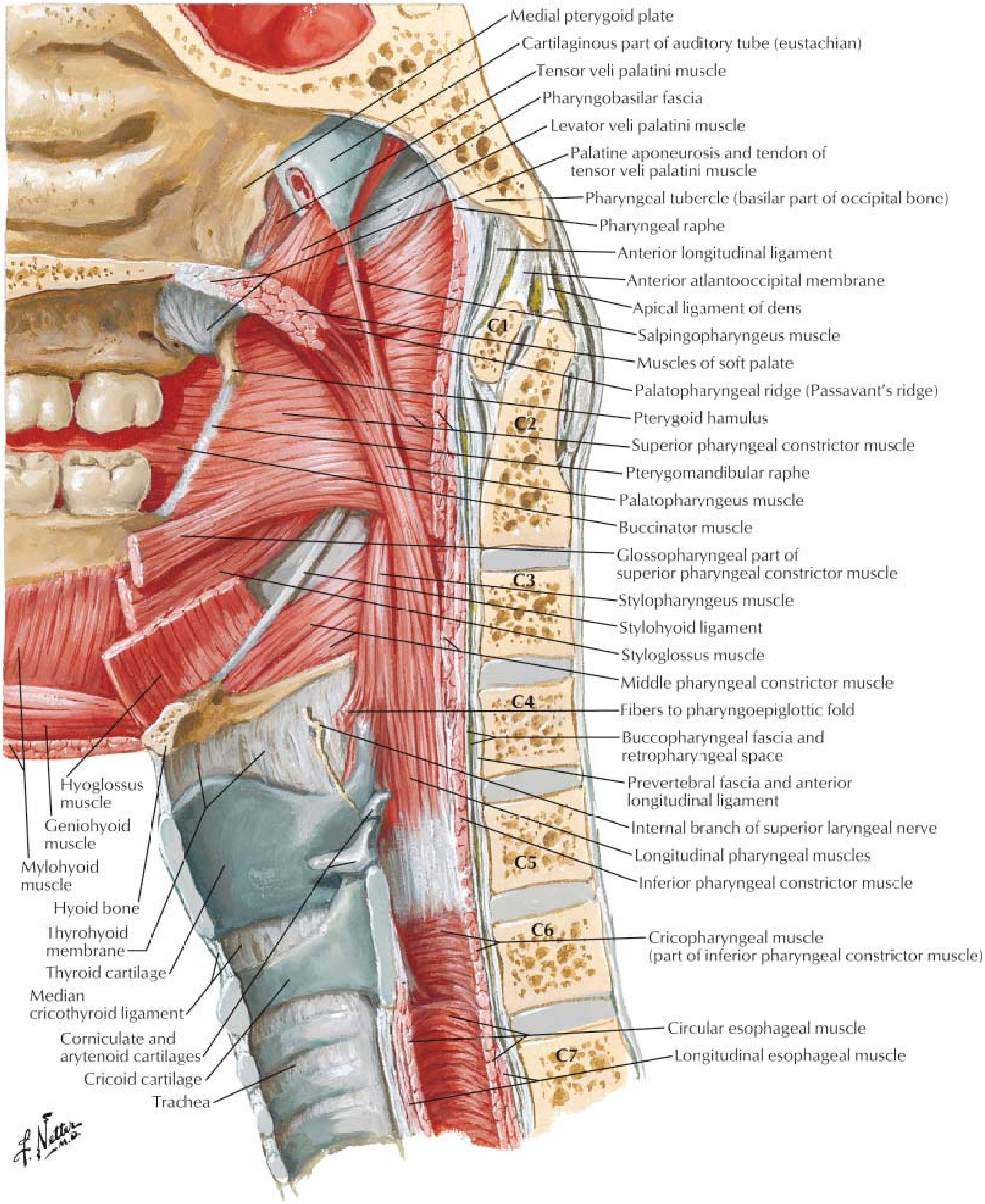

Medial pterygoid plate
Cartilaginous part of auditory tube (eustachian)
Tensor veli palatini muscle
Pharyngobasilar fascia
Levator veli palatini muscle
Palatine aponeurosis and tendon of tensor veli palatini muscle
Pharyngeal tubercle (basilar part of occipital bone)
Pharyngeal raphe
Anterior longitudinal ligament
Anterior atlantooccipital membrane
Apical ligament of dens
Salpingopharyngeus muscle
Muscles of soft palate
Palatopharyngeal ridge (Passavant's ridge)
Pterygoid hamulus
Superior pharyngeal constrictor muscle
Pterygomandibular raphe
Palatopharyngeus muscle
Buccinator muscle
Glossopharyngeal part of superior pharyngeal constrictor muscle
Stylopharyngeus muscle
Stylohyoid ligament
Styloglossus muscle
Middle pharyngeal constrictor muscle
Fibers to pharyngoepiglottic fold
Buccopharyngeal fascia and retropharyngeal space
Prevertebral fascia and anterior longitudinal ligament
Internal branch of superior laryngeal nerve
Longitudinal pharyngeal muscles
Inferior pharyngeal constrictor muscle
Cricopharyngeal muscle (part of inferior pharyngeal constrictor muscle)
Circular esophageal muscle
Longitudinal esophageal muscle
C1
C2
C3
C4
C5
C6
C7
Hyoglossus muscle
Geniohyoid muscle
Mylohyoid muscle
Hyoid bone
Thyrohyoid membrane
Thyroid cartilage
Median cricothyroid ligament
Corniculate and arytenoid cartilages
Cricoid cartilage
Trachea
F. Netter M.D.

Plate 79 Pharynx: Opened Posterior View

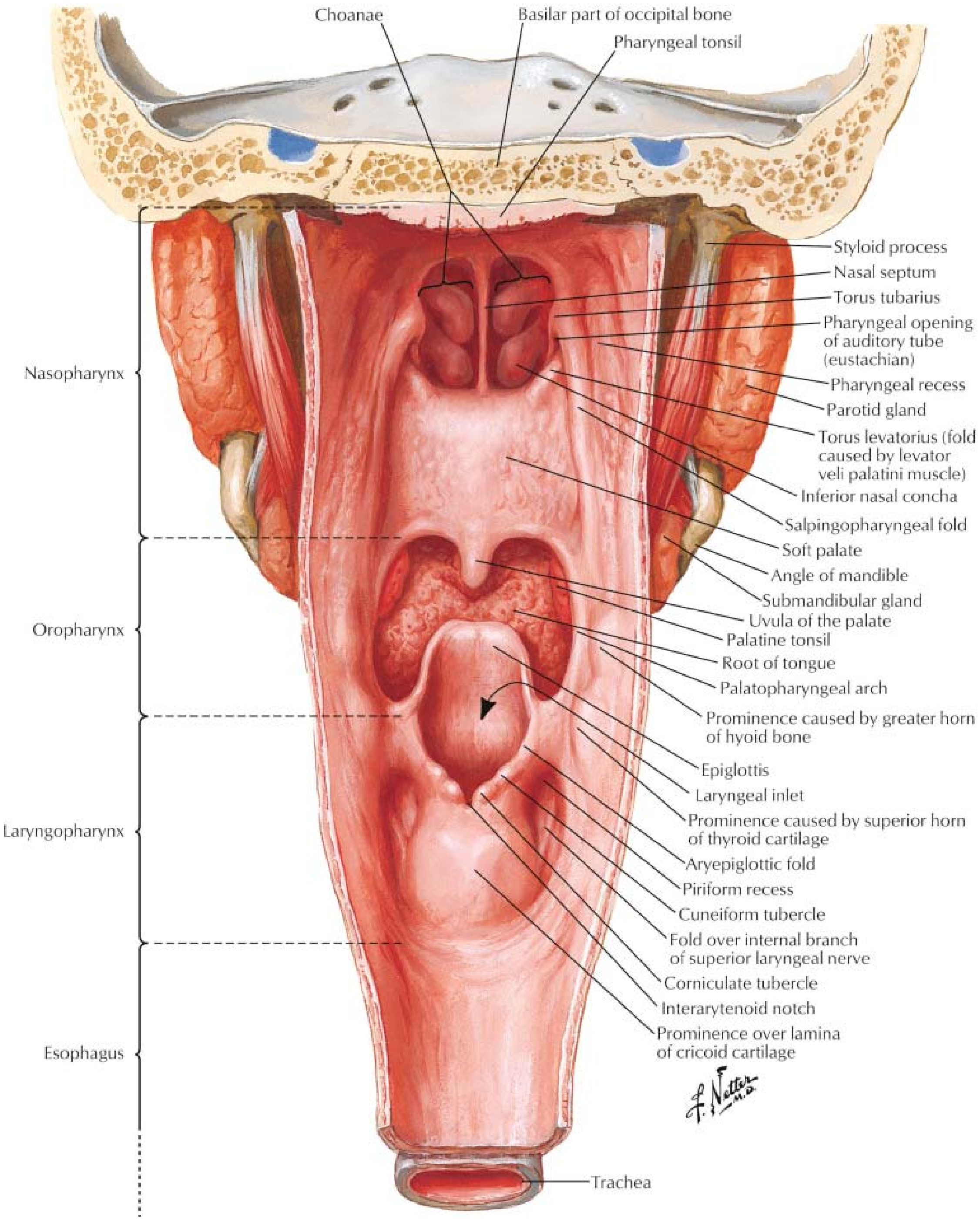

Choanae
Basilar part of occipital bone
Pharyngeal tonsil
Styloid process
Nasal septum
Torus tubarius
Pharyngeal opening of auditory tube (eustachian)
Pharyngeal recess
Parotid gland
Torus levatorius (fold caused by levator veli palatini muscle)
Inferior nasal concha
Salpingopharyngeal fold
Soft palate
Angle of mandible
Submandibular gland
Uvula of the palate
Palatine tonsil
Root of tongue
Palatopharyngeal arch
Prominence caused by greater horn of hyoid bone
Epiglottis
Laryngeal inlet
Prominence caused by superior horn of thyroid cartilage
Aryepiglottic fold
Piriform recess
Cuneiform tubercle
Fold over internal branch of superior laryngeal nerve
Corniculate tubercle
Interarytenoid notch
Prominence over lamina of cricoid cartilage
Trachea
Nasopharynx
Oropharynx
Laryngopharynx
Esophagus

Plate 80 Pharyngoesophageal Junction

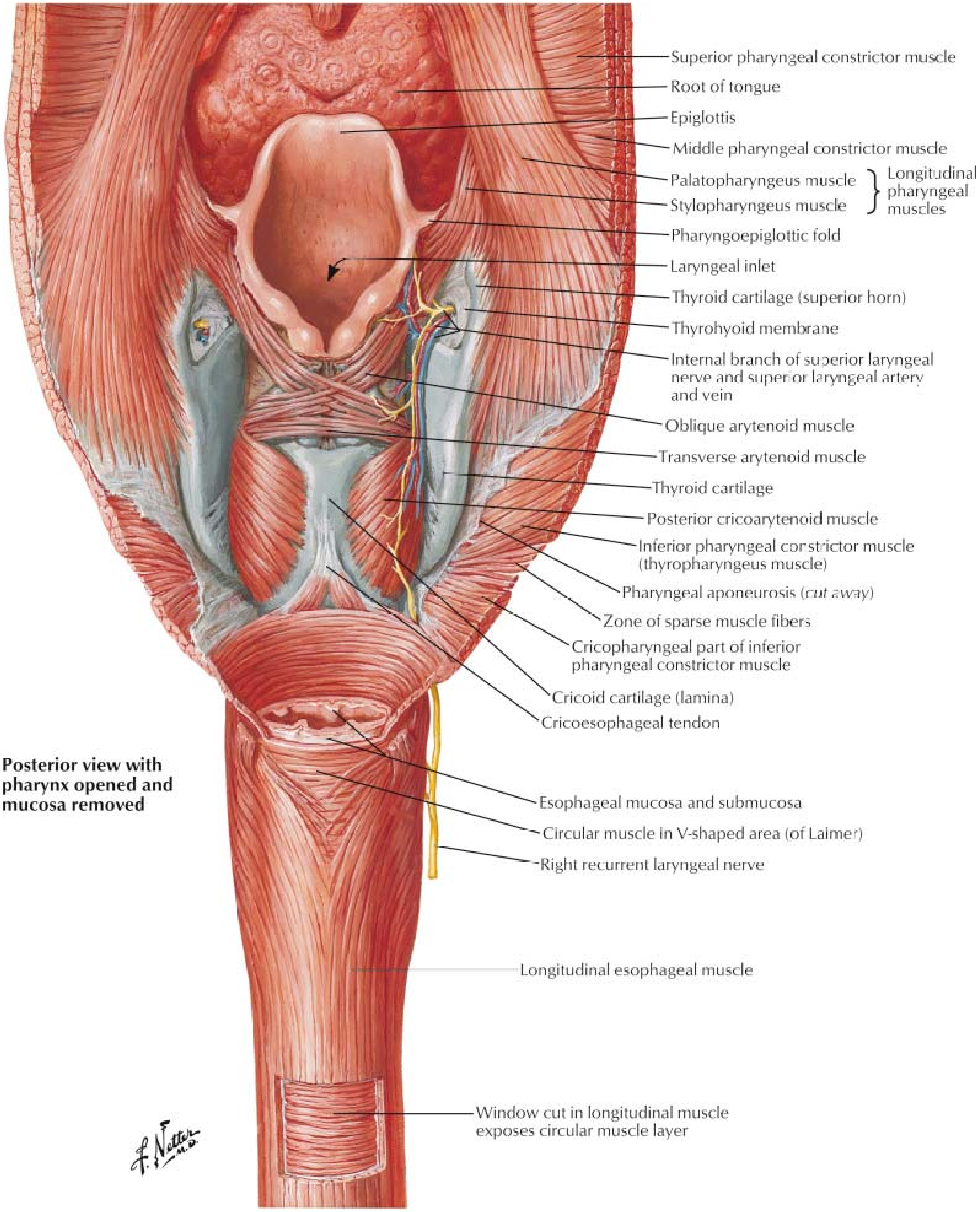

Superior pharyngeal constrictor muscle
Root of tongue
Epiglottis
Middle pharyngeal constrictor muscle
Palatopharyngeus muscle
Stylopharyngeus muscle
Longitudinal pharyngeal muscles
Pharyngoepiglottic fold
Laryngeal inlet
Thyroid cartilage (superior horn)
Thyrohyoid membrane
Internal branch of superior laryngeal nerve and superior laryngeal artery and vein
Oblique arytenoid muscle
Transverse arytenoid muscle
Thyroid cartilage
Posterior cricoarytenoid muscle
Inferior pharyngeal constrictor muscle (thyropharyngeus muscle)
Pharyngeal aponeurosis (cut away)
Zone of sparse muscle fibers
Cricopharyngeal part of inferior pharyngeal constrictor muscle
Cricoid cartilage (lamina)
Cricoesophageal tendon
Posterior view with pharynx opened and mucosa removed
Esophageal mucosa and submucosa
Circular muscle in V-shaped area (of Laimer)
Right recurrent laryngeal nerve
Longitudinal esophageal muscle
Window cut in longitudinal muscle exposes circular muscle layer
F. Netter M.D.

Plate 81 Muscles of Pharynx: Lateral View

See also **Plate 75** (s0390)

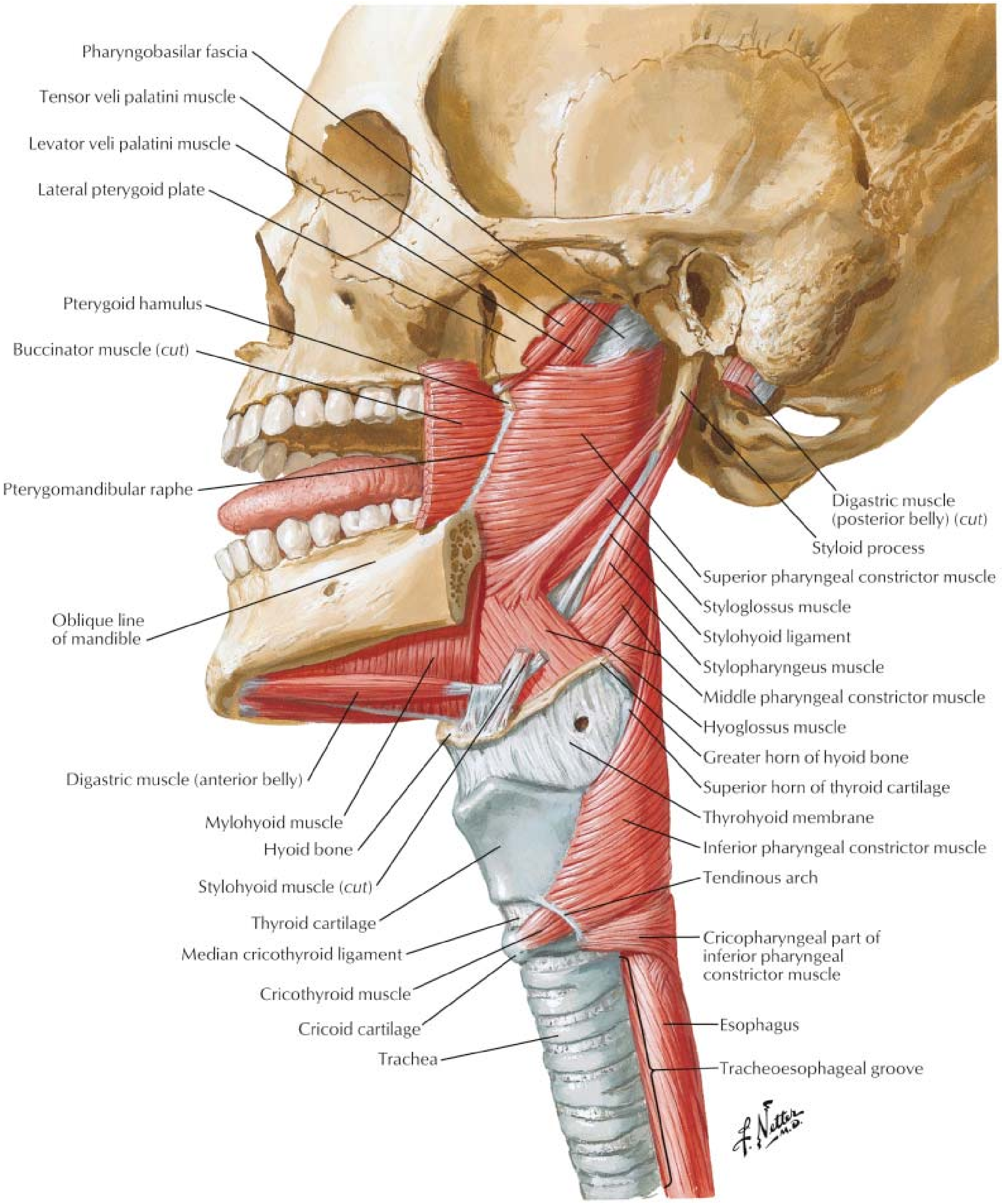

Pharyngobasilar fascia
Tensor veli palatini muscle
Levator veli palatini muscle
Lateral pterygoid plate
Pterygoid hamulus
Buccinator muscle (*cut*)
Pterygomandibular raphe
Oblique line of mandible
Digastric muscle (anterior belly)
Mylohyoid muscle
Hyoid bone
Stylohyoid muscle (*cut*)
Thyroid cartilage
Median cricothyroid ligament
Cricothyroid muscle
Cricoid cartilage
Trachea
Digastric muscle (posterior belly) (*cut*)
Styloid process
Superior pharyngeal constrictor muscle
Styloglossus muscle
Stylohyoid ligament
Stylopharyngeus muscle
Middle pharyngeal constrictor muscle
Hyoglossus muscle
Greater horn of hyoid bone
Superior horn of thyroid cartilage
Thyrohyoid membrane
Inferior pharyngeal constrictor muscle
Tendinous arch
Cricopharyngeal part of inferior pharyngeal constrictor muscle
Esophagus
Tracheoesophageal groove

Plate 82 Nerves of Oral, Head, and Neck Regions

See also **Plates 59** (s0300) , **133** (s0705) , **136** (s0720)

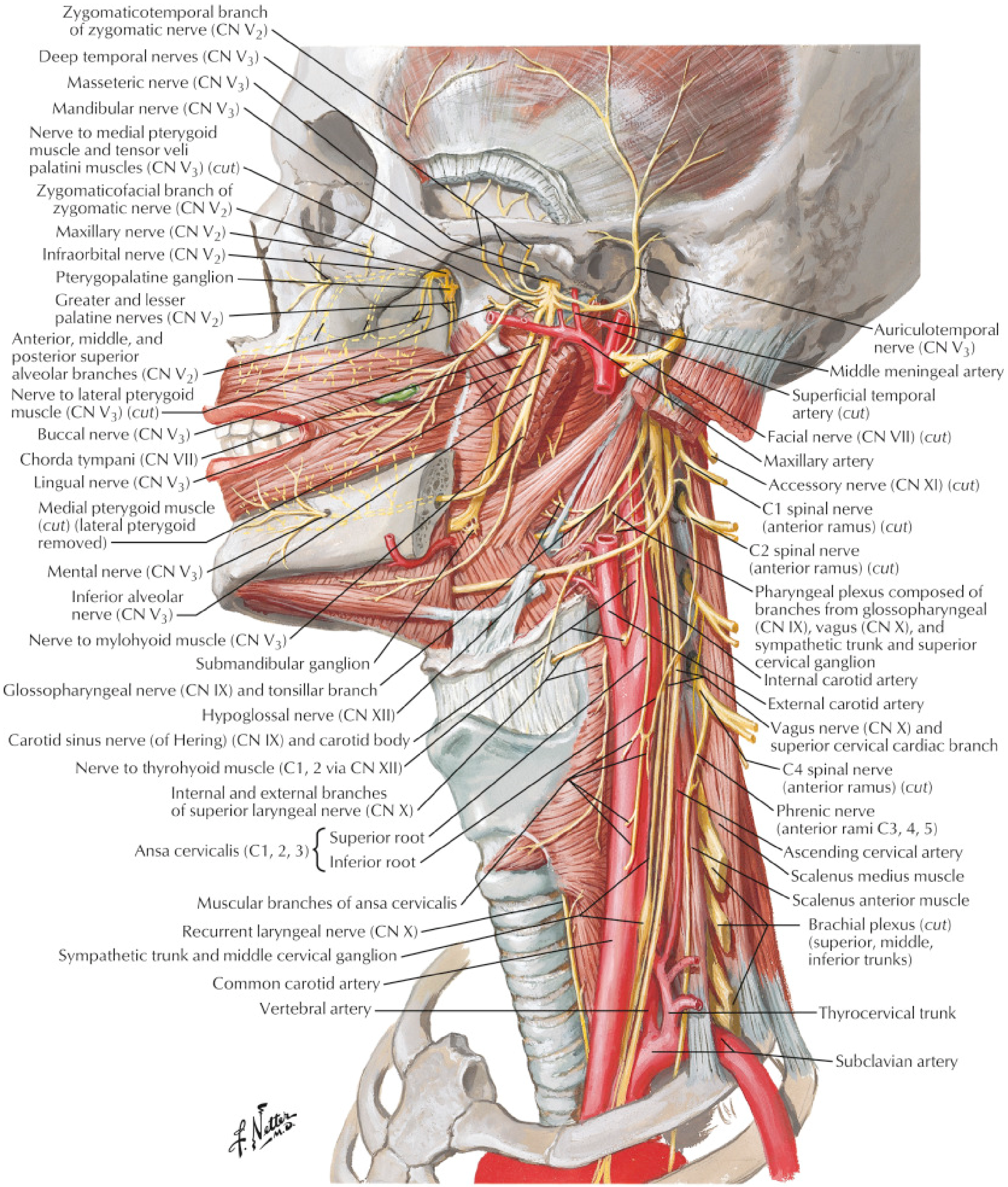

Zygomaticotemporal branch of zygomatic nerve (CN V_2)
Deep temporal nerves (CN V_3)
Masseteric nerve (CN V_3)
Mandibular nerve (CN V_3)
Nerve to medial pterygoid muscle and tensor veli palatini muscles (CN V_3) (*cut*)
Zygomaticofacial branch of zygomatic nerve (CN V_2)
Maxillary nerve (CN V_2)
Infraorbital nerve (CN V_2)
Pterygopalatine ganglion
Greater and lesser palatine nerves (CN V_2)
Anterior, middle, and posterior superior alveolar branches (CN V_2)
Nerve to lateral pterygoid muscle (CN V_3) (*cut*)
Buccal nerve (CN V_3)
Chorda tympani (CN VII)
Lingual nerve (CN V_3)
Medial pterygoid muscle (*cut*) (lateral pterygoid removed)
Mental nerve (CN V_3)
Inferior alveolar nerve (CN V_3)
Nerve to mylohyoid muscle (CN V_3)
Submandibular ganglion
Glossopharyngeal nerve (CN IX) and tonsillar branch
Hypoglossal nerve (CN XII)
Carotid sinus nerve (of Hering) (CN IX) and carotid body
Nerve to thyrohyoid muscle (C1, 2 via CN XII)
Internal and external branches of superior laryngeal nerve (CN X)
Ansa cervicalis (C1, 2, 3) { Superior root
Inferior root
Muscular branches of ansa cervicalis
Recurrent laryngeal nerve (CN X)
Sympathetic trunk and middle cervical ganglion
Common carotid artery
Vertebral artery
Auriculotemporal nerve (CN V_3)
Middle meningeal artery
Superficial temporal artery (*cut*)
Facial nerve (CN VII) (*cut*)
Maxillary artery
Accessory nerve (CN XI) (*cut*)
C1 spinal nerve (anterior ramus) (*cut*)
C2 spinal nerve (anterior ramus) (*cut*)
Pharyngeal plexus composed of branches from glossopharyngeal (CN IX), vagus (CN X), and sympathetic trunk and superior cervical ganglion
Internal carotid artery
External carotid artery
Vagus nerve (CN X) and superior cervical cardiac branch
C4 spinal nerve (anterior ramus) (*cut*)
Phrenic nerve (anterior rami C3, 4, 5)
Ascending cervical artery
Scalenus medius muscle
Scalenus anterior muscle
Brachial plexus (*cut*) (superior, middle, inferior trunks)
Thyrocervical trunk
Subclavian artery
F. Netter M.D.

Plate 83 Arteries of Oral and Pharyngeal Regions

See also **Plates 41** (s0205) , **57** (s0290)

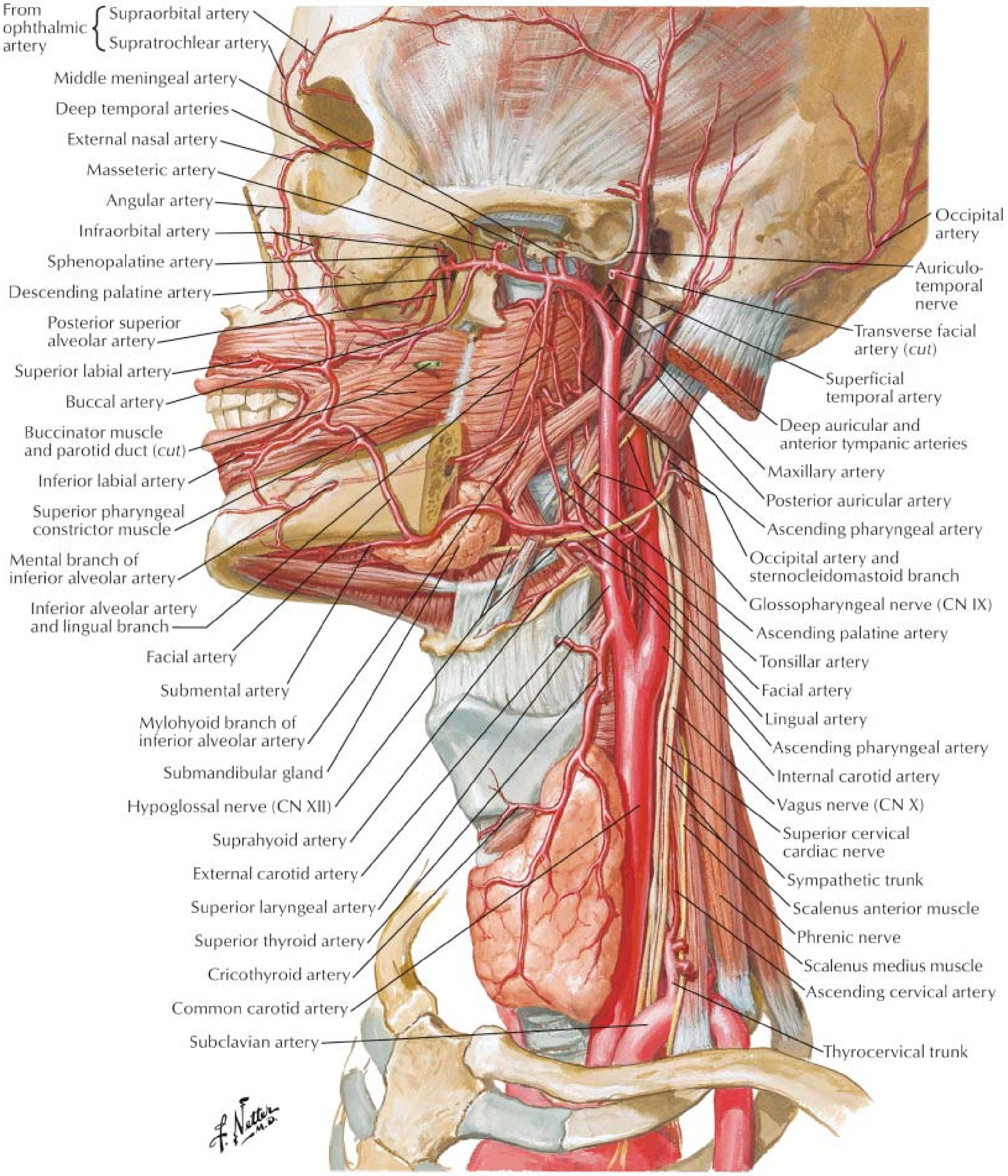

From ophthalmic artery
Supraorbital artery
Supratrochlear artery
Middle meningeal artery
Deep temporal arteries
External nasal artery
Masseteric artery
Angular artery
Infraorbital artery
Sphenopalatine artery
Descending palatine artery
Posterior superior alveolar artery
Superior labial artery
Buccal artery
Buccinator muscle and parotid duct (cut)
Inferior labial artery
Superior pharyngeal constrictor muscle
Mental branch of inferior alveolar artery
Inferior alveolar artery and lingual branch
Facial artery
Submental artery
Mylohyoid branch of inferior alveolar artery
Submandibular gland
Hypoglossal nerve (CN XII)
Suprahyoid artery
External carotid artery
Superior laryngeal artery
Superior thyroid artery
Cricothyroid artery
Common carotid artery
Subclavian artery
Occipital artery
Auriculotemporal nerve
Transverse facial artery (cut)
Superficial temporal artery
Deep auricular and anterior tympanic arteries
Maxillary artery
Posterior auricular artery
Ascending pharyngeal artery
Occipital artery and sternocleidomastoid branch
Glossopharyngeal nerve (CN IX)
Ascending palatine artery
Tonsillar artery
Facial artery
Lingual artery
Ascending pharyngeal artery
Internal carotid artery
Vagus nerve (CN X)
Superior cervical cardiac nerve
Sympathetic trunk
Scalenus anterior muscle
Phrenic nerve
Scalenus medius muscle
Ascending cervical artery
Thyrocervical trunk

Plate 84 Veins of Face and Neck Regions

See also **Plate 85** (s0440)

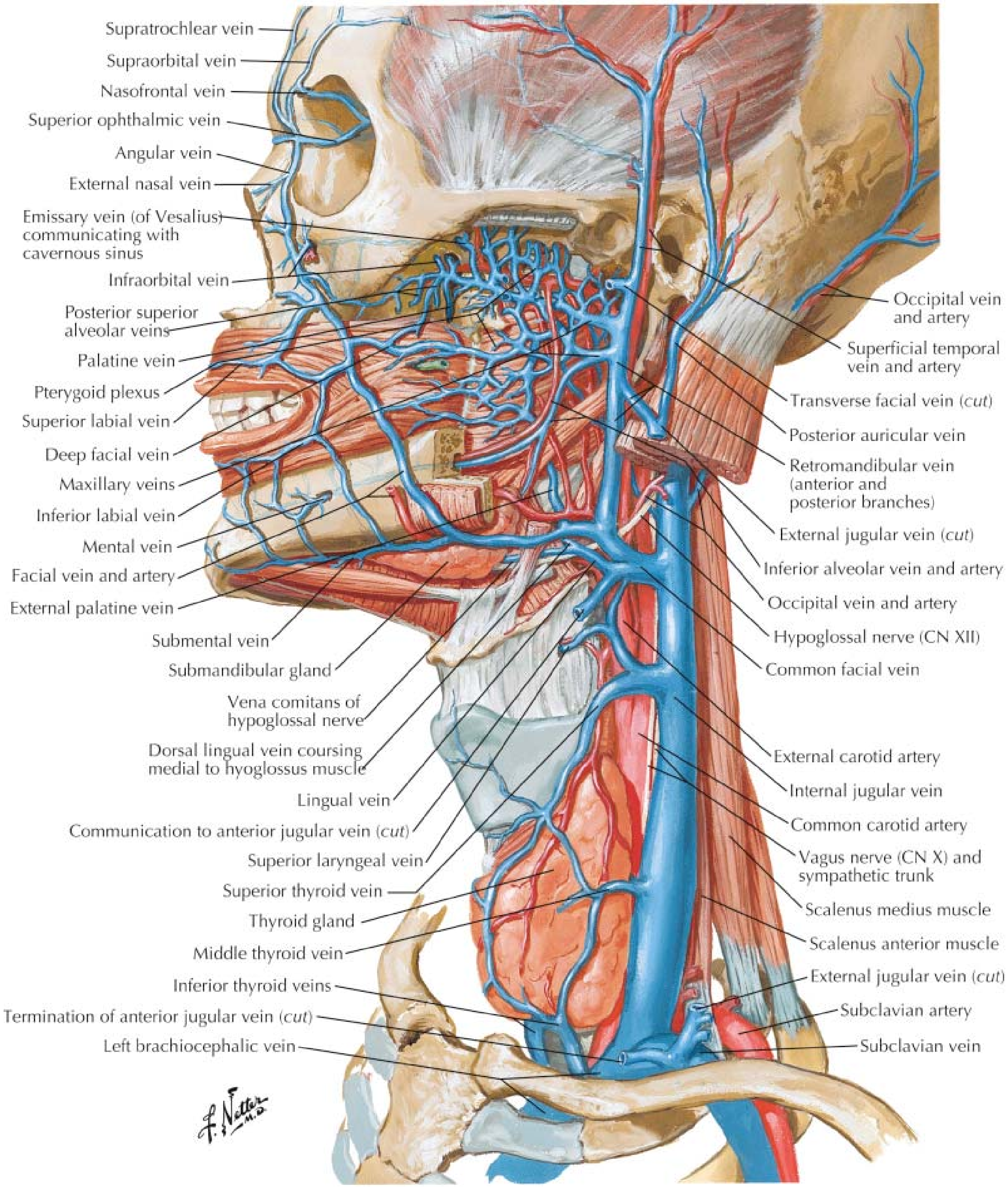
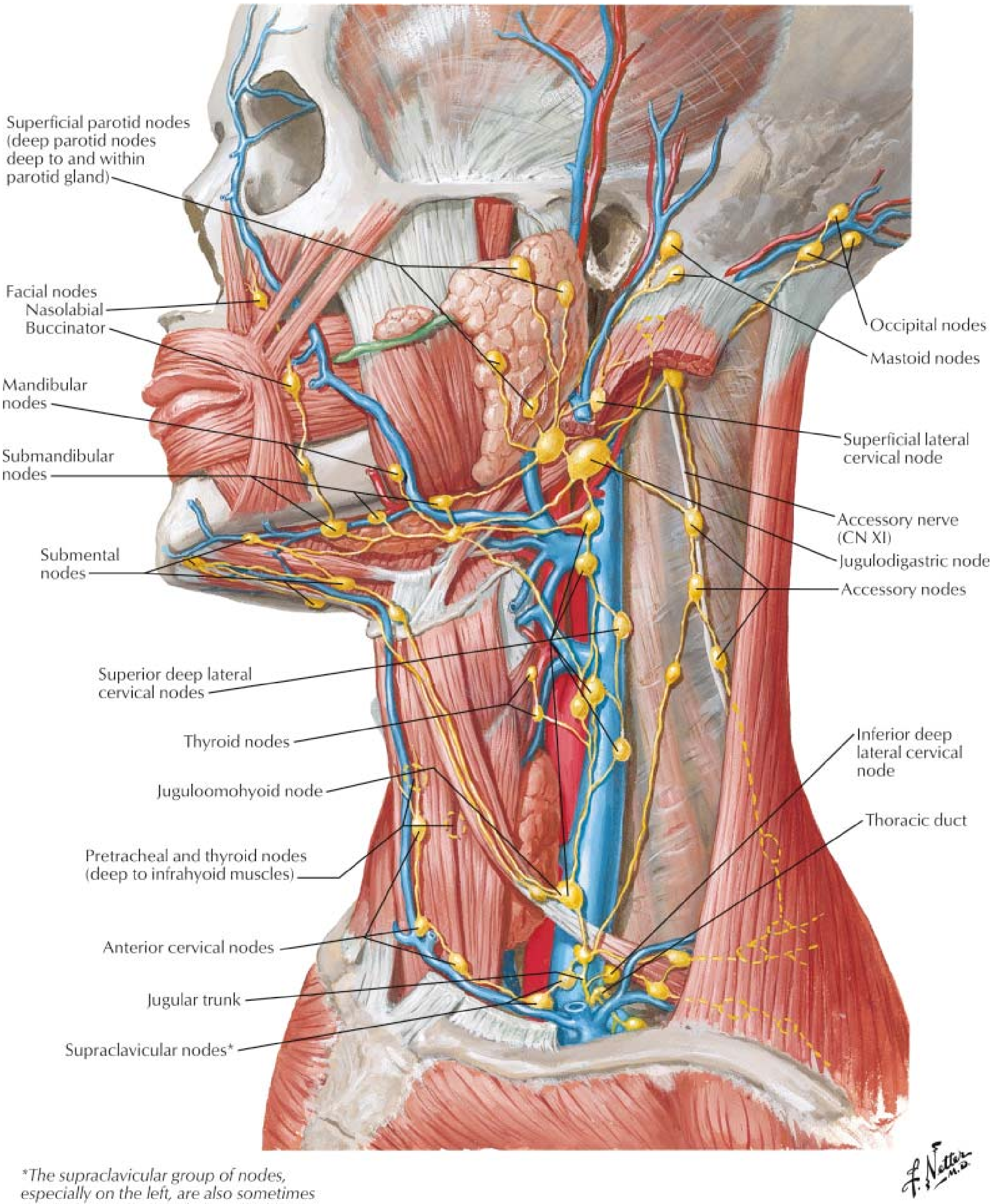

Supratrochlear vein
Supraorbital vein
Nasofrontal vein
Superior ophthalmic vein
Angular vein
External nasal vein
Emissary vein (of Vesalius) communicating with cavernous sinus
Infraorbital vein
Posterior superior alveolar veins
Palatine vein
Pterygoid plexus
Superior labial vein
Deep facial vein
Maxillary veins
Inferior labial vein
Mental vein
Facial vein and artery
External palatine vein
Submental vein
Submandibular gland
Vena comitans of hypoglossal nerve
Dorsal lingual vein coursing medial to hyoglossus muscle
Lingual vein
Communication to anterior jugular vein (cut)
Superior laryngeal vein
Superior thyroid vein
Thyroid gland
Middle thyroid vein
Inferior thyroid veins
Termination of anterior jugular vein (cut)
Left brachiocephalic vein
Occipital vein and artery
Superficial temporal vein and artery
Transverse facial vein (cut)
Posterior auricular vein
Retromandibular vein (anterior and posterior branches)
External jugular vein (cut)
Inferior alveolar vein and artery
Occipital vein and artery
Hypoglossal nerve (CN XII)
Common facial vein
External carotid artery
Internal jugular vein
Common carotid artery
Vagus nerve (CN X) and sympathetic trunk
Scalenus medius muscle
Scalenus anterior muscle
External jugular vein (cut)
Subclavian artery
Subclavian vein
F. Netter M.D.

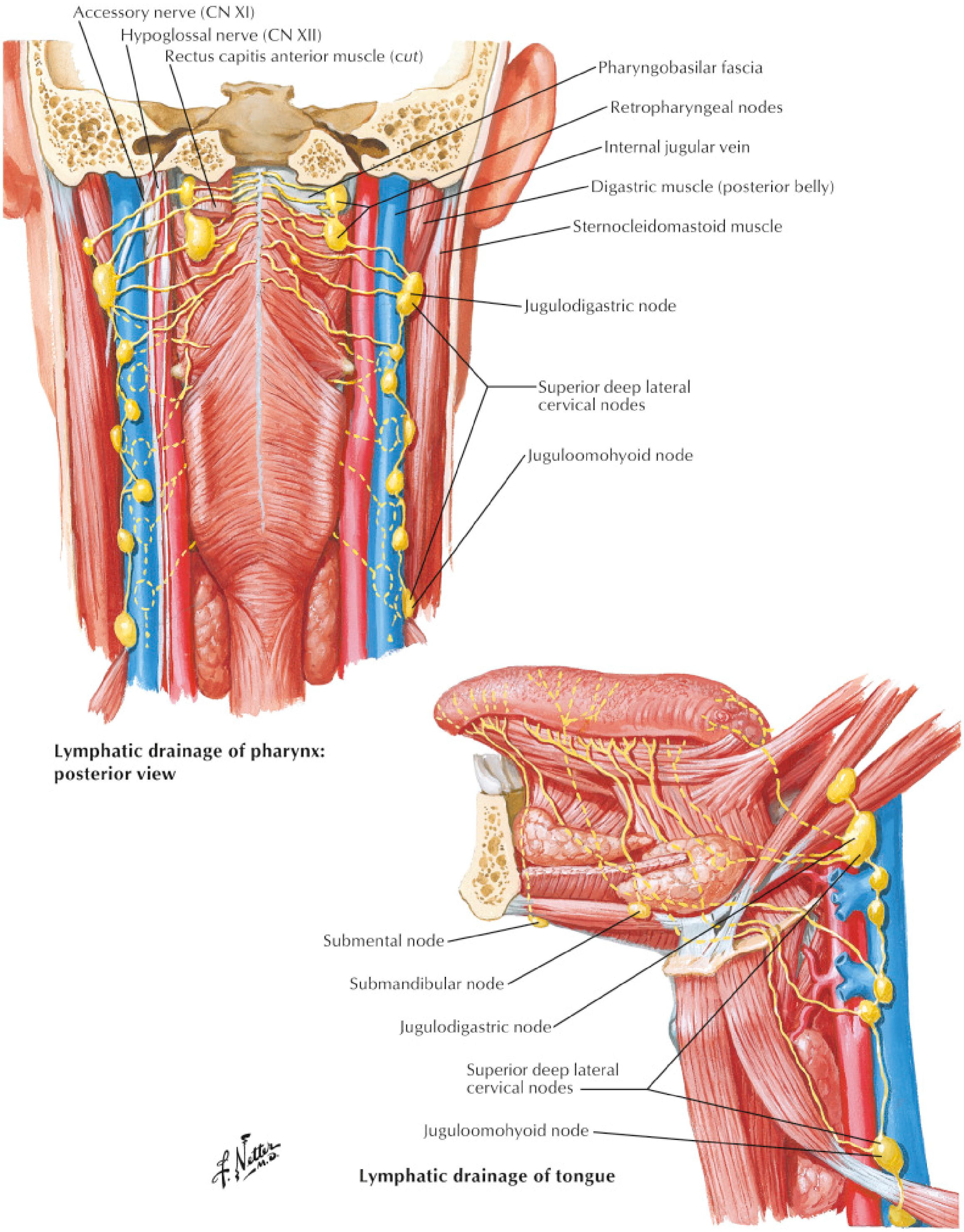
Plate 85 Lymph Vessels and Nodes of Head and Neck

See also **Plate 242**


Superficial parotid nodes (deep parotid nodes deep to and within parotid gland)
Facial nodes
Nasolabial
Buccinator
Mandibular nodes
Submandibular nodes
Submental nodes
Superior deep lateral cervical nodes
Thyroid nodes
Juguloomohyoid node
Pretracheal and thyroid nodes (deep to infrahyoid muscles)
Anterior cervical nodes
Jugular trunk
Supraclavicular nodes*
Occipital nodes
Mastoid nodes
Superficial lateral cervical node
Accessory nerve (CN XI)
Jugulodigastric node
Accessory nodes
Inferior deep lateral cervical node
Thoracic duct
F. Netter M.D.

**The supraclavicular group of nodes, especially on the left, are also sometimes referred to as the signal or sentinel lymph nodes of Virchow or Troisier, especially when sufficiently enlarged and palpable. These nodes (or a single node) are so termed because they may be the first recognized presumptive evidence of malignant disease in the viscera.*

Plate 86 Lymph Vessels and Nodes of Pharynx and Tongue


Accessory nerve (CN XI)
Hypoglossal nerve (CN XII)
Rectus capitis anterior muscle (cut)
Pharyngobasilar fascia
Retropharyngeal nodes
Internal jugular vein
Digastric muscle (posterior belly)
Sternocleidomastoid muscle
Jugulodigastric node
Superior deep lateral cervical nodes
Juguloomohyoid node
Submental node
Submandibular node
Jugulodigastric node
Superior deep lateral cervical nodes
Juguloomohyoid node
F. Netter M.D.

Lymphatic drainage of pharynx: posterior view

Lymphatic drainage of tongue

Thyroid Gland and Larynx

Plate 87 Thyroid Gland: Anterior View

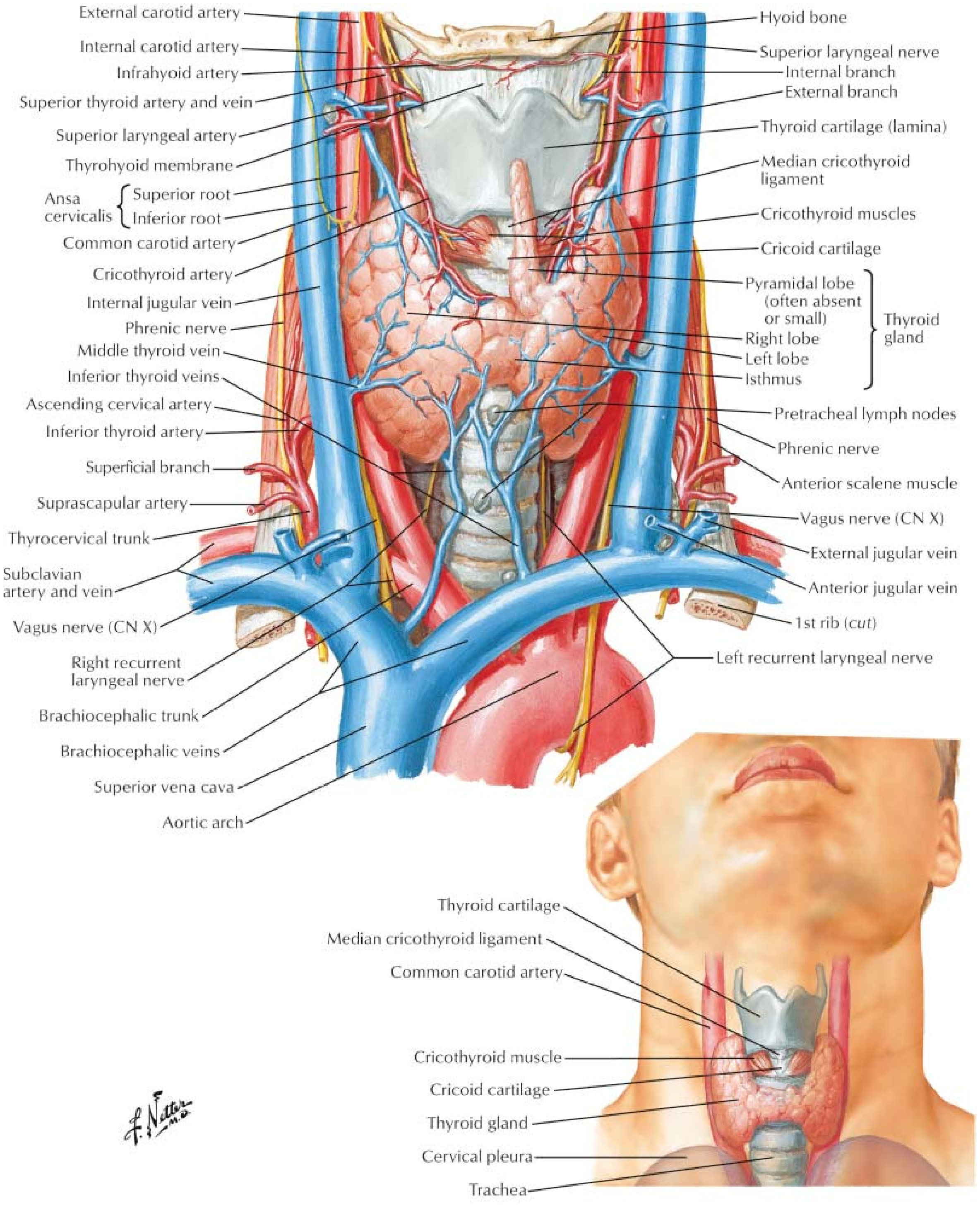

External carotid artery
Internal carotid artery
Infrahyoid artery
Superior thyroid artery and vein
Superior laryngeal artery
Thyrohyoid membrane
Ansa cervicalis
Superior root
Inferior root
Common carotid artery
Cricothyroid artery
Internal jugular vein
Phrenic nerve
Middle thyroid vein
Inferior thyroid veins
Ascending cervical artery
Inferior thyroid artery
Superficial branch
Suprascapular artery
Thyrocervical trunk
Subclavian artery and vein
Vagus nerve (CN X)
Right recurrent laryngeal nerve
Brachiocephalic trunk
Brachiocephalic veins
Superior vena cava
Aortic arch
Hyoid bone
Superior laryngeal nerve
Internal branch
External branch
Thyroid cartilage (lamina)
Median cricothyroid ligament
Cricothyroid muscles
Cricoid cartilage
Pyramidal lobe (often absent or small)
Right lobe
Left lobe
Isthmus
Thyroid gland
Pretracheal lymph nodes
Phrenic nerve
Anterior scalene muscle
Vagus nerve (CN X)
External jugular vein
Anterior jugular vein
1st rib (*cut*)
Left recurrent laryngeal nerve
Thyroid cartilage
Median cricothyroid ligament
Common carotid artery
Cricothyroid muscle
Cricoid cartilage
Thyroid gland
Cervical pleura
Trachea

Plate 88 Thyroid Gland and Pharynx: Posterior View

See also **Plate 89** (s0465)

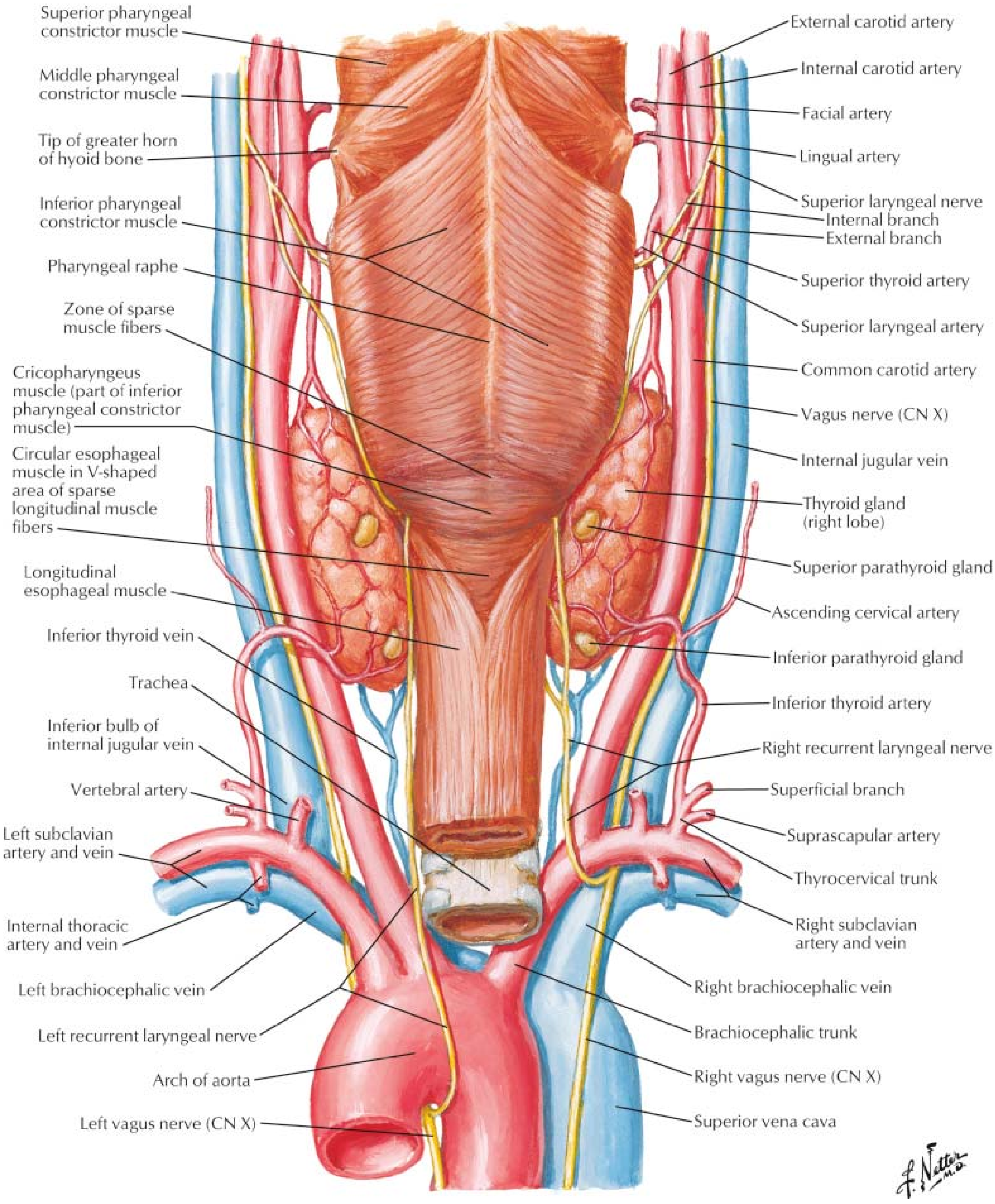

Superior pharyngeal constrictor muscle
Middle pharyngeal constrictor muscle
Tip of greater horn of hyoid bone
Inferior pharyngeal constrictor muscle
Pharyngeal raphe
Zone of sparse muscle fibers
Cricopharyngeus muscle (part of inferior pharyngeal constrictor muscle)
Circular esophageal muscle in V-shaped area of sparse longitudinal muscle fibers
Longitudinal esophageal muscle
Inferior thyroid vein
Trachea
Inferior bulb of internal jugular vein
Vertebral artery
Left subclavian artery and vein
Internal thoracic artery and vein
Left brachiocephalic vein
Left recurrent laryngeal nerve
Arch of aorta
Left vagus nerve (CN X)
External carotid artery
Internal carotid artery
Facial artery
Lingual artery
Superior laryngeal nerve
Internal branch
External branch
Superior thyroid artery
Superior laryngeal artery
Common carotid artery
Vagus nerve (CN X)
Internal jugular vein
Thyroid gland (right lobe)
Superior parathyroid gland
Ascending cervical artery
Inferior parathyroid gland
Inferior thyroid artery
Right recurrent laryngeal nerve
Superficial branch
Suprascapular artery
Thyrocervical trunk
Right subclavian artery and vein
Right brachiocephalic vein
Brachiocephalic trunk
Right vagus nerve (CN X)
Superior vena cava
F. Netter M.D.

Plate 89 Parathyroid Glands

See also **Plates 80** (s0415) , **88** (s0460) , **92** (s0480)

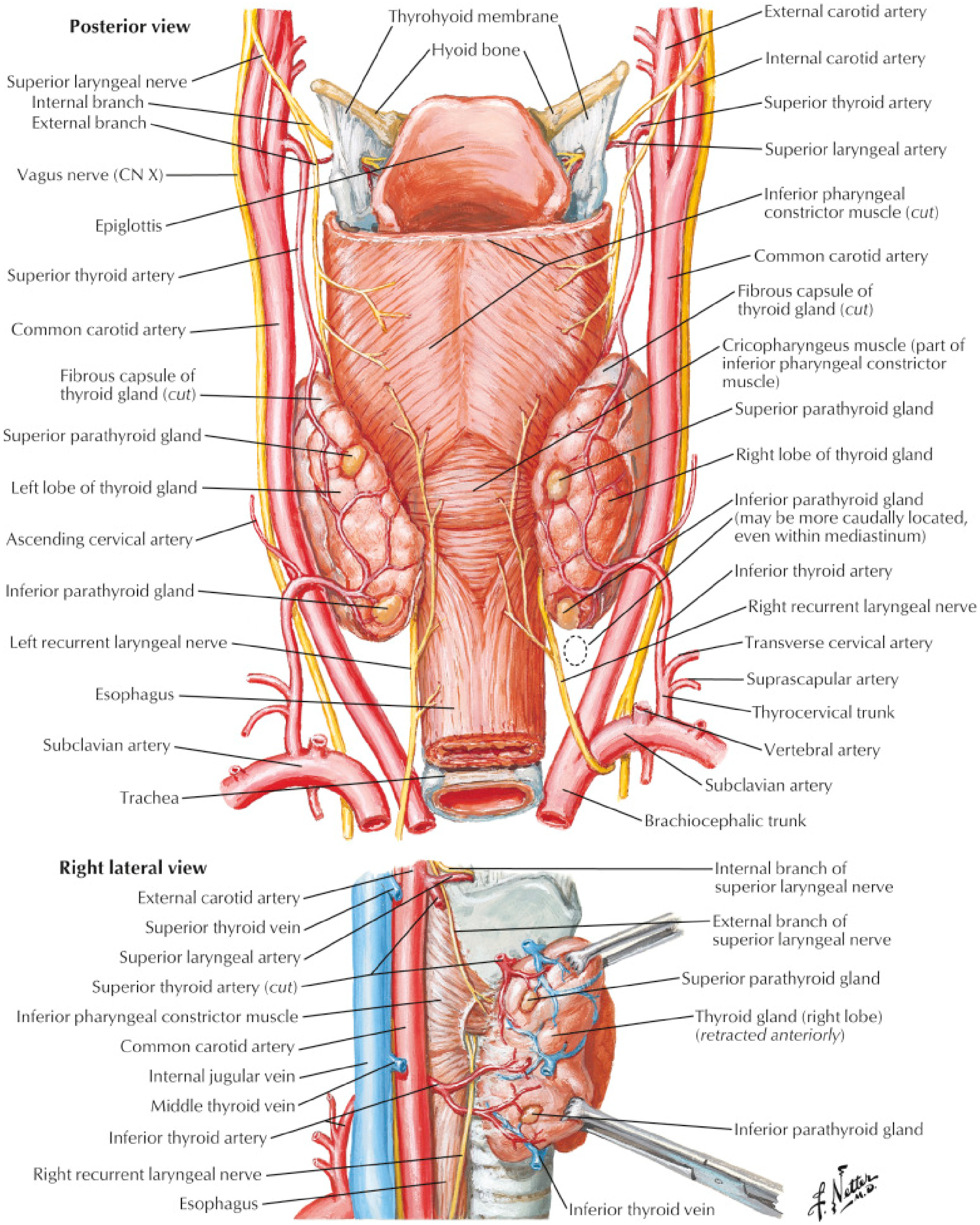

Posterior view
Thyrohyoid membrane
Hyoid bone
External carotid artery
Internal carotid artery
Superior laryngeal nerve
Internal branch
External branch
Superior thyroid artery
Superior laryngeal artery
Vagus nerve (CN X)
Epiglottis
Inferior pharyngeal constrictor muscle (*cut*)
Superior thyroid artery
Common carotid artery
Common carotid artery
Fibrous capsule of thyroid gland (*cut*)
Cricopharyngeus muscle (part of inferior pharyngeal constrictor muscle)
Fibrous capsule of thyroid gland (*cut*)
Superior parathyroid gland
Superior parathyroid gland
Right lobe of thyroid gland
Left lobe of thyroid gland
Inferior parathyroid gland (may be more caudally located, even within mediastinum)
Ascending cervical artery
Inferior thyroid artery
Inferior parathyroid gland
Right recurrent laryngeal nerve
Left recurrent laryngeal nerve
Transverse cervical artery
Suprascapular artery
Esophagus
Thyrocervical trunk
Subclavian artery
Vertebral artery
Subclavian artery
Trachea
Brachiocephalic trunk
Right lateral view
Internal branch of superior laryngeal nerve
External carotid artery
Superior thyroid vein
External branch of superior laryngeal nerve
Superior laryngeal artery
Superior thyroid artery (*cut*)
Superior parathyroid gland
Inferior pharyngeal constrictor muscle
Thyroid gland (right lobe) (*retracted anteriorly*)
Common carotid artery
Internal jugular vein
Middle thyroid vein
Inferior thyroid artery
Inferior parathyroid gland
Right recurrent laryngeal nerve
Esophagus
Inferior thyroid vein

Plate 90 Cartilages of Larynx

See also **Plates 91** (s0475) , **92** (s0480) , **93** (s0485)

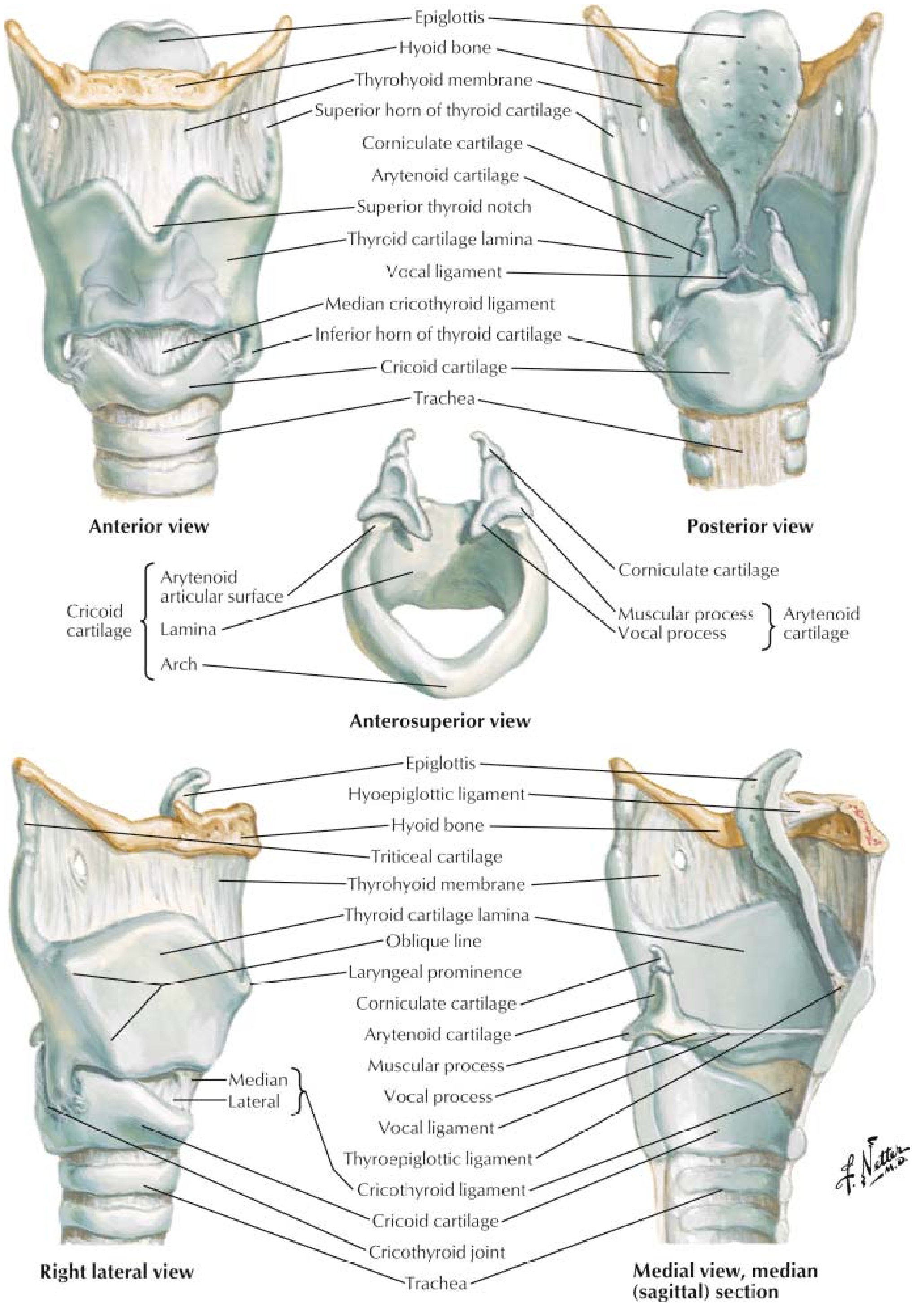

Epiglottis
Hyoid bone
Thyrohyoid membrane
Superior horn of thyroid cartilage
Corniculate cartilage
Arytenoid cartilage
Superior thyroid notch
Thyroid cartilage lamina
Vocal ligament
Median cricothyroid ligament
Inferior horn of thyroid cartilage
Cricoid cartilage
Trachea
Anterior view
Posterior view
Cricoid cartilage
Arytenoid articular surface
Lamina
Arch
Corniculate cartilage
Muscular process
Vocal process
Arytenoid cartilage
Anterosuperior view
Epiglottis
Hyoepiglottic ligament
Hyoid bone
Triticeal cartilage
Thyrohyoid membrane
Thyroid cartilage lamina
Oblique line
Laryngeal prominence
Corniculate cartilage
Arytenoid cartilage
Muscular process
Vocal process
Vocal ligament
Median
Lateral
Thyroepiglottic ligament
Cricothyroid ligament
Cricoid cartilage
Cricothyroid joint
Trachea
Right lateral view
Medial view, median (sagittal) section
F. Netter M.D.

Plate 91 Intrinsic Muscles of Larynx

See also **Plates 90** (s0470) , **92** (s0480) , **93** (s0485)

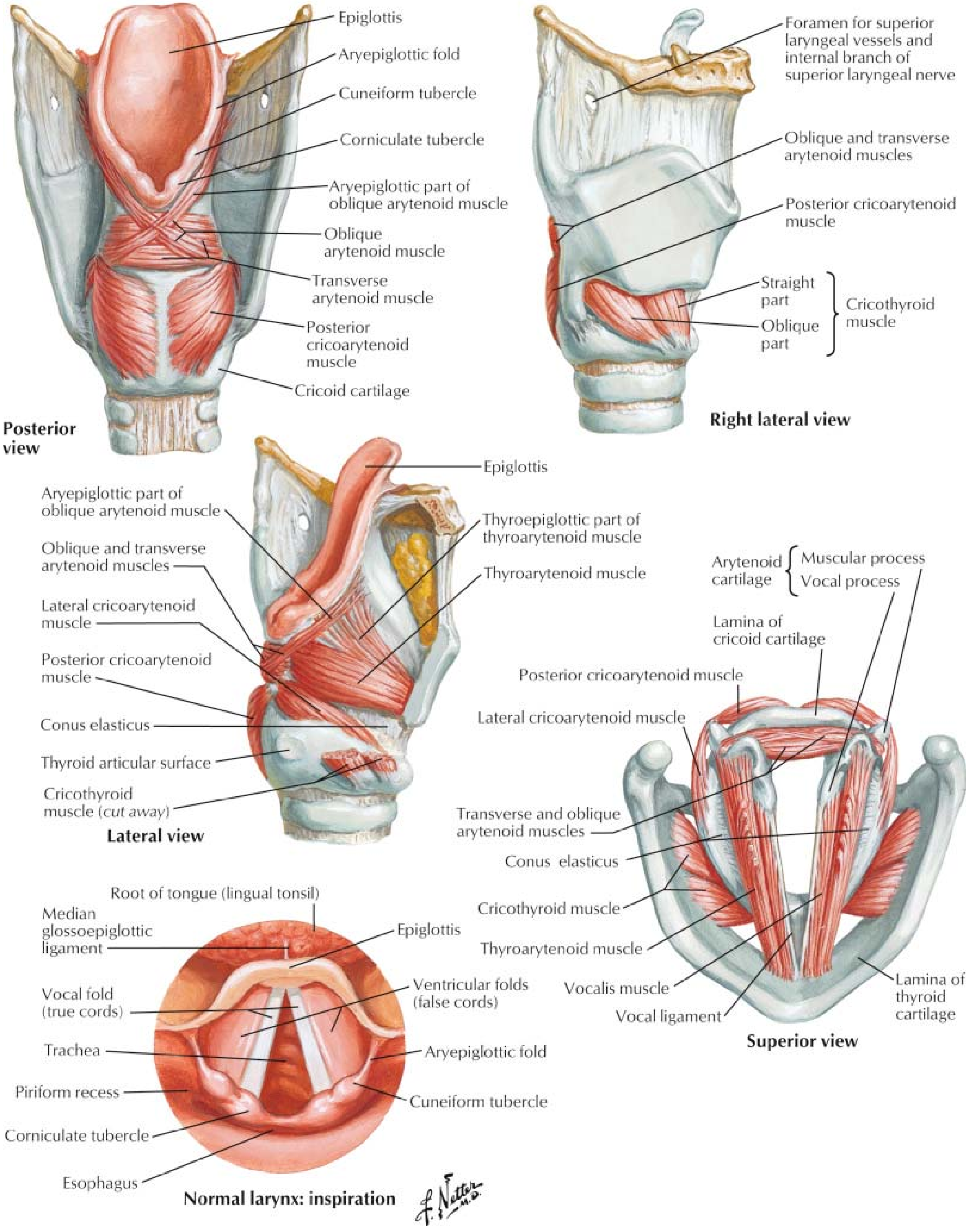
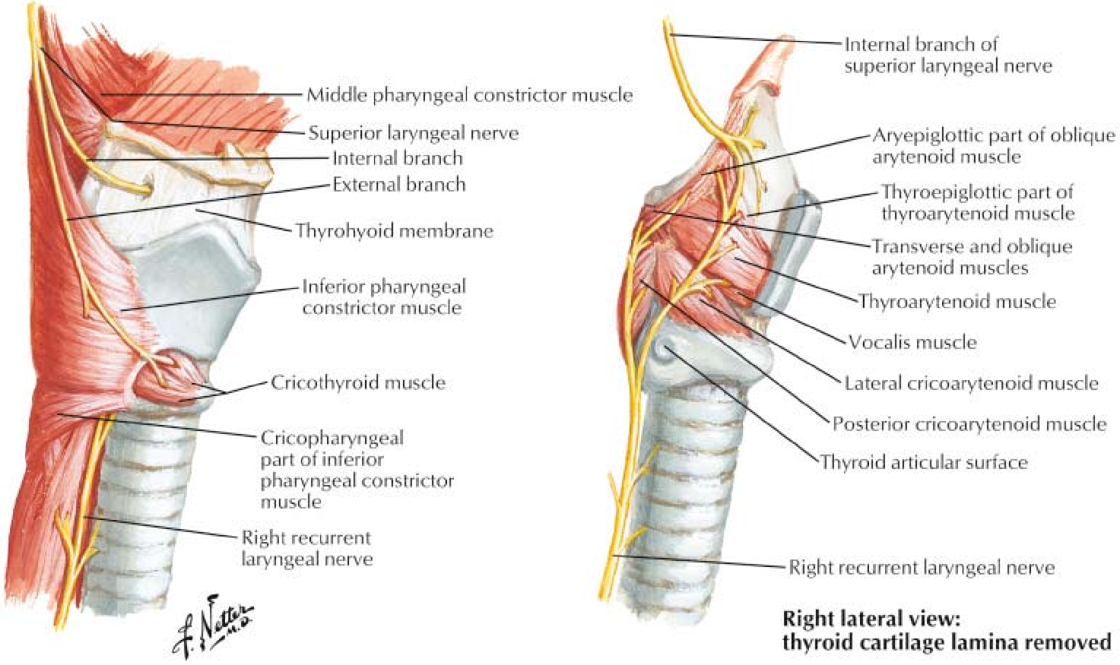
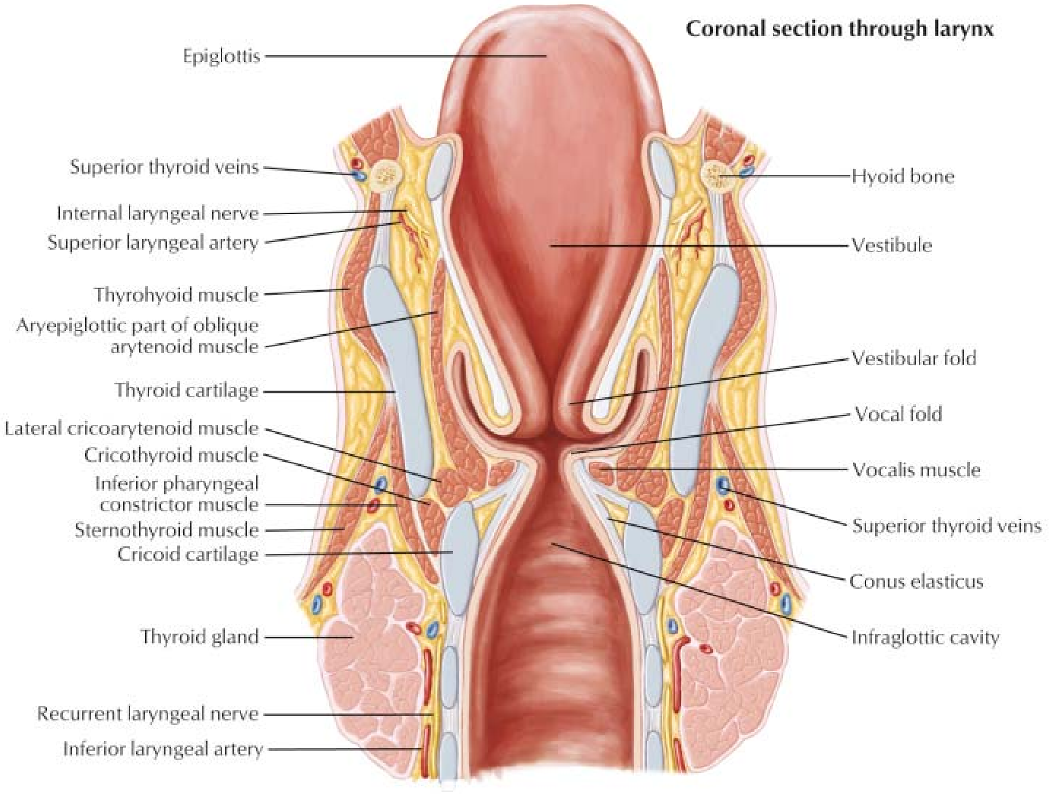

Epiglottis
Aryepiglottic fold
Cuneiform tubercle
Corniculate tubercle
Aryepiglottic part of oblique arytenoid muscle
Oblique arytenoid muscle
Transverse arytenoid muscle
Posterior cricoarytenoid muscle
Cricoid cartilage
Posterior view
Foramen for superior laryngeal vessels and internal branch of superior laryngeal nerve
Oblique and transverse arytenoid muscles
Posterior cricoarytenoid muscle
Straight part
Oblique part
Cricothyroid muscle
Right lateral view
Epiglottis
Aryepiglottic part of oblique arytenoid muscle
Thyroepiglottic part of thyroarytenoid muscle
Oblique and transverse arytenoid muscles
Thyroarytenoid muscle
Lateral cricoarytenoid muscle
Posterior cricoarytenoid muscle
Conus elasticus
Thyroid articular surface
Cricothyroid muscle (cut away)
Lateral view
Arytenoid cartilage
Muscular process
Vocal process
Lamina of cricoid cartilage
Posterior cricoarytenoid muscle
Lateral cricoarytenoid muscle
Transverse and oblique arytenoid muscles
Conus elasticus
Cricothyroid muscle
Thyroarytenoid muscle
Vocalis muscle
Vocal ligament
Lamina of thyroid cartilage
Superior view
Root of tongue (lingual tonsil)
Median glossoepiglottic ligament
Epiglottis
Vocal fold (true cords)
Ventricular folds (false cords)
Trachea
Aryepiglottic fold
Piriform recess
Cuneiform tubercle
Corniculate tubercle
Esophagus
Normal larynx: inspiration
F. Netter M.D.

Plate 92 Nerves and Coronal Section of Larynx

See also **Plates 90** (s0470) , **91** (s0475) , **93** (s0485)


Middle pharyngeal constrictor muscle
Superior laryngeal nerve
Internal branch
External branch
Thyrohyoid membrane
Inferior pharyngeal constrictor muscle
Cricothyroid muscle
Cricopharyngeal part of inferior pharyngeal constrictor muscle
Right recurrent laryngeal nerve
F. Netter M.D.
Internal branch of superior laryngeal nerve
Aryepiglottic part of oblique arytenoid muscle
Thyroepiglottic part of thyroarytenoid muscle
Transverse and oblique arytenoid muscles
Thyroarytenoid muscle
Vocalis muscle
Lateral cricoarytenoid muscle
Posterior cricoarytenoid muscle
Thyroid articular surface
Right recurrent laryngeal nerve

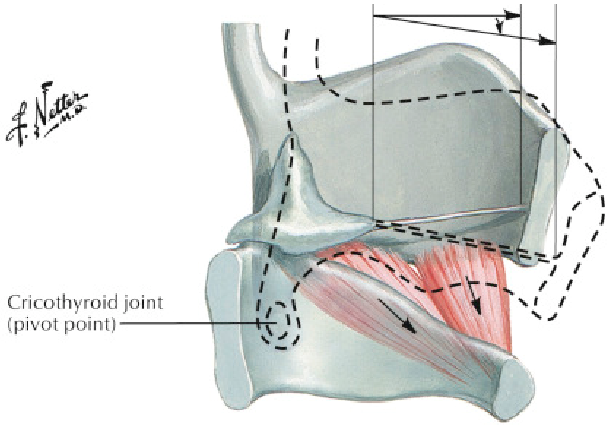
Right lateral view: thyroid cartilage lamina removed


Coronal section through larynx

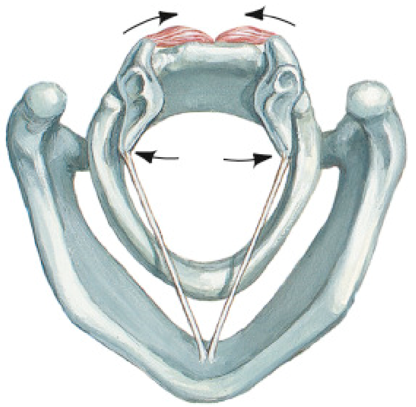
Epiglottis
Superior thyroid veins
Internal laryngeal nerve
Superior laryngeal artery
Thyrohyoid muscle
Aryepiglottic part of oblique arytenoid muscle
Thyroid cartilage
Lateral cricoarytenoid muscle
Cricothyroid muscle
Inferior pharyngeal constrictor muscle
Sternothyroid muscle
Cricoid cartilage
Thyroid gland
Recurrent laryngeal nerve
Inferior laryngeal artery
Hyoid bone
Vestibule
Vestibular fold
Vocal fold
Vocalis muscle
Superior thyroid veins
Conus elasticus
Infraglottic cavity

Plate 93 Action of Intrinsic Muscles of Larynx

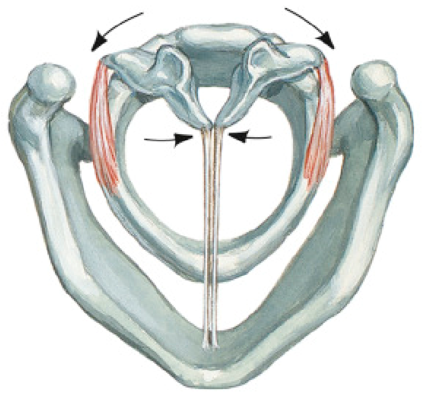
See also **Plates 90** (s0470) , **91** (s0475) , **92** (s0480)



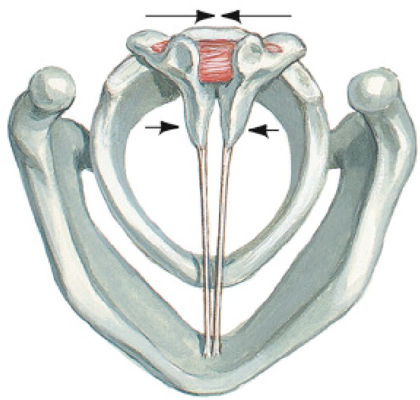
Action of cricothyroid muscles
Lengthening (increasing tension) of vocal ligaments



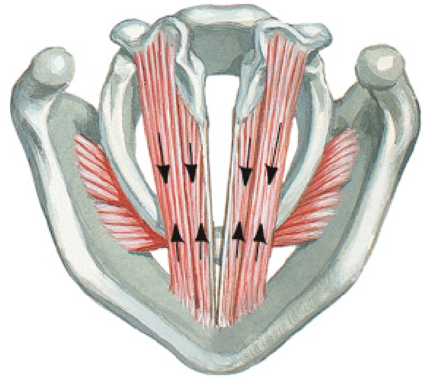
Action of posterior cricoarytenoid muscles
Abduction of vocal ligaments



Action of lateral cricoarytenoid muscles
Adduction of vocal ligaments



Action of transverse and oblique arytenoid muscles
Adduction of vocal ligaments



Action of vocalis and thyroarytenoid muscles
Shortening (relaxation) of vocal ligaments

Orbit and Contents

Plate 94 Eyelids

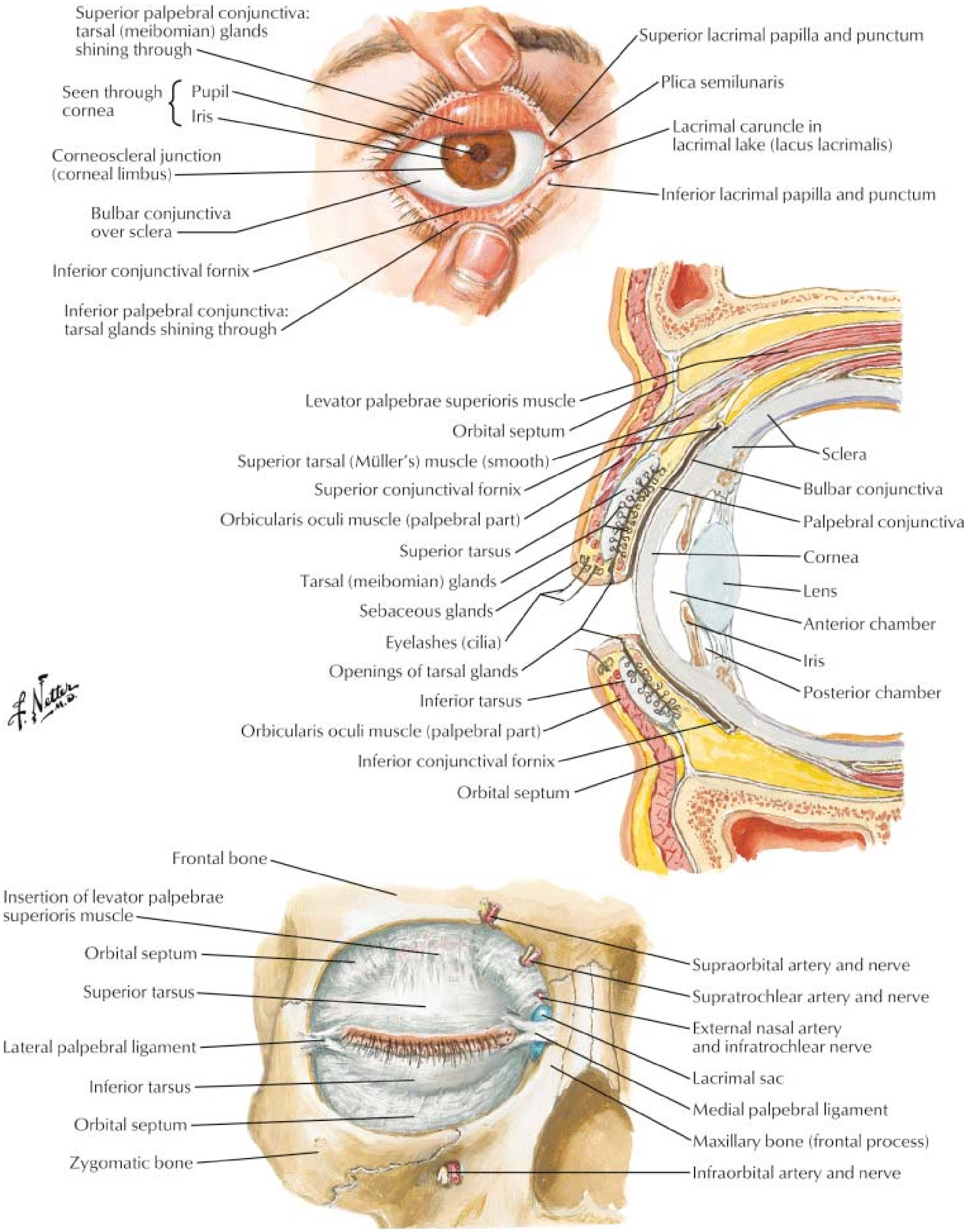
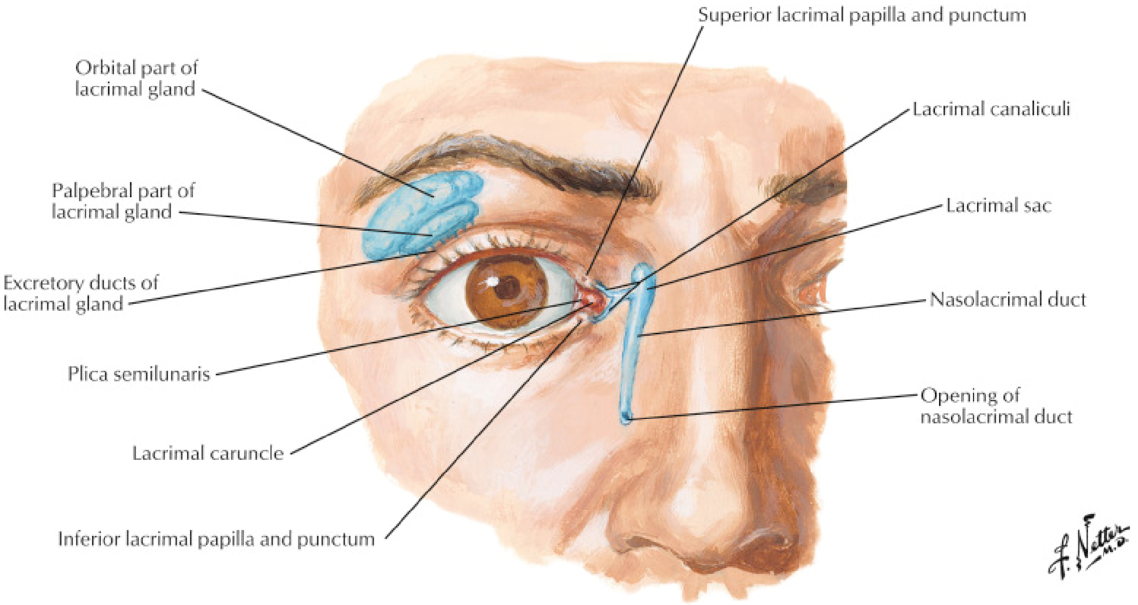

Superior palpebral conjunctiva: tarsal (meibomian) glands shining through
Seen through cornea
Pupil
Iris
Corneoscleral junction (corneal limbus)
Bulbar conjunctiva over sclera
Inferior conjunctival fornix
Inferior palpebral conjunctiva: tarsal glands shining through
Superior lacrimal papilla and punctum
Plica semilunaris
Lacrimal caruncle in lacrimal lake (lacus lacrimalis)
Inferior lacrimal papilla and punctum
Levator palpebrae superioris muscle
Orbital septum
Superior tarsal (Müller's) muscle (smooth)
Superior conjunctival fornix
Orbicularis oculi muscle (palpebral part)
Superior tarsus
Tarsal (meibomian) glands
Sebaceous glands
Eyelashes (cilia)
Openings of tarsal glands
Inferior tarsus
Orbicularis oculi muscle (palpebral part)
Inferior conjunctival fornix
Orbital septum
Sclera
Bulbar conjunctiva
Palpebral conjunctiva
Cornea
Lens
Anterior chamber
Iris
Posterior chamber
F. Netter M.D.
Frontal bone
Insertion of levator palpebrae superioris muscle
Orbital septum
Superior tarsus
Lateral palpebral ligament
Inferior tarsus
Orbital septum
Zygomatic bone
Supraorbital artery and nerve
Supratrochlear artery and nerve
External nasal artery and infratrochlear nerve
Lacrimal sac
Medial palpebral ligament
Maxillary bone (frontal process)
Infraorbital artery and nerve

Plate 95 Lacrimal Apparatus

See also **Plate 144** (s0760)


Superior lacrimal papilla and punctum
Orbital part of lacrimal gland
Lacrimal canaliculi
Palpebral part of lacrimal gland
Lacrimal sac
Excretory ducts of lacrimal gland
Nasolacrimal duct
Plica semilunaris
Opening of nasolacrimal duct
Lacrimal caruncle
Inferior lacrimal papilla and punctum
F. Netter M.D.

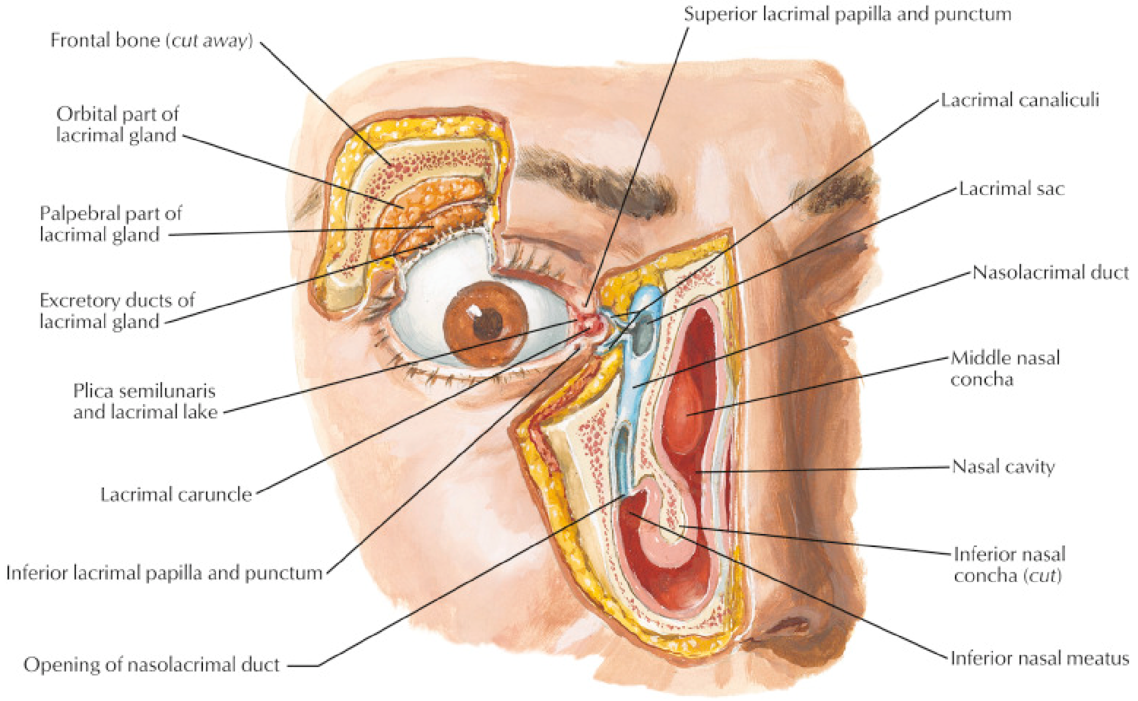

Superior lacrimal papilla and punctum
Frontal bone (cut away)
Lacrimal canaliculi
Orbital part of lacrimal gland
Lacrimal sac
Palpebral part of lacrimal gland
Nasolacrimal duct
Excretory ducts of lacrimal gland
Middle nasal concha
Plica semilunaris and lacrimal lake
Nasal cavity
Lacrimal caruncle
Inferior nasal concha (cut)
Inferior lacrimal papilla and punctum
Opening of nasolacrimal duct
Inferior nasal meatus

Plate 96 Extrinsic Eye Muscles

See also **Plate 97** (s0510)

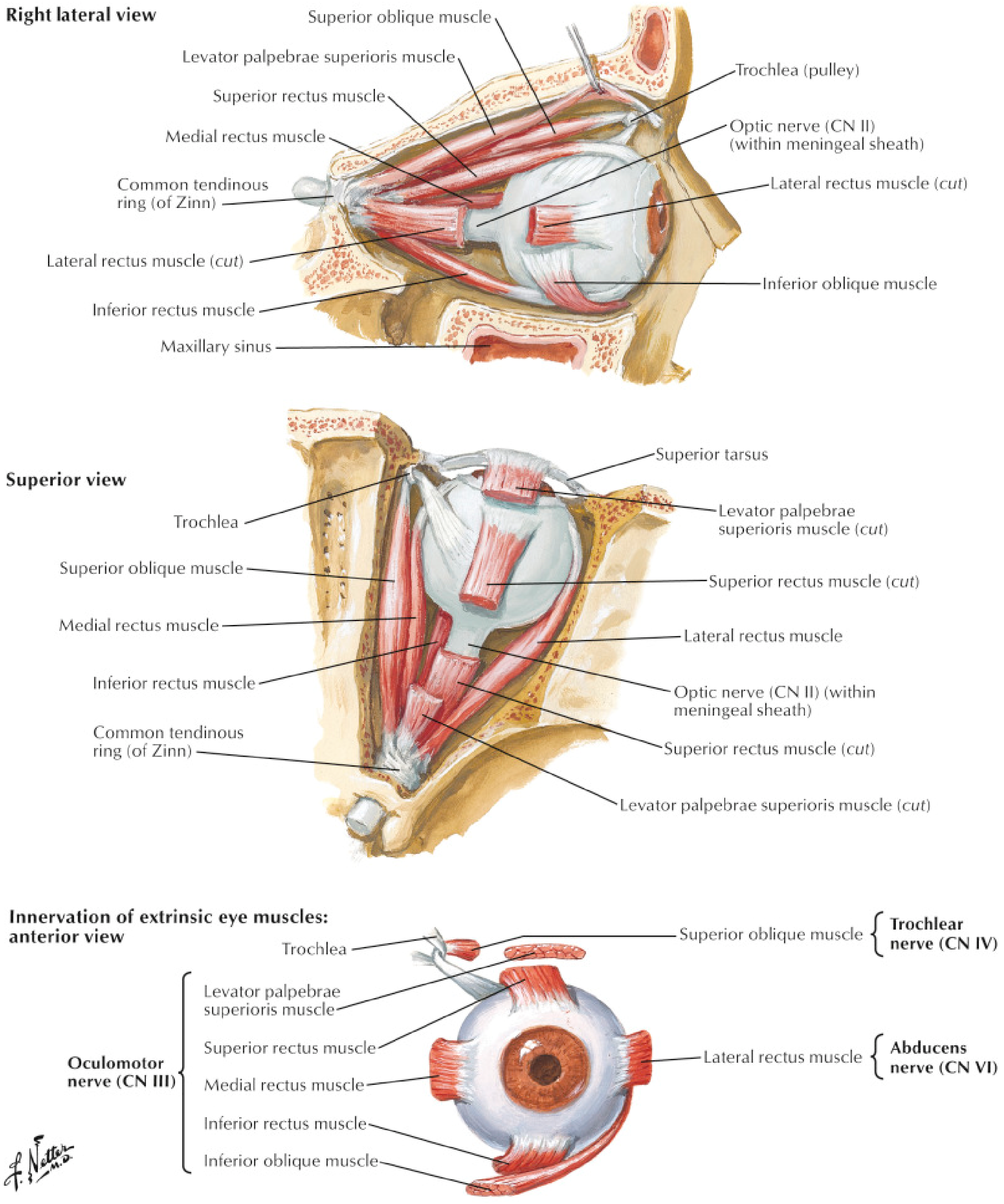
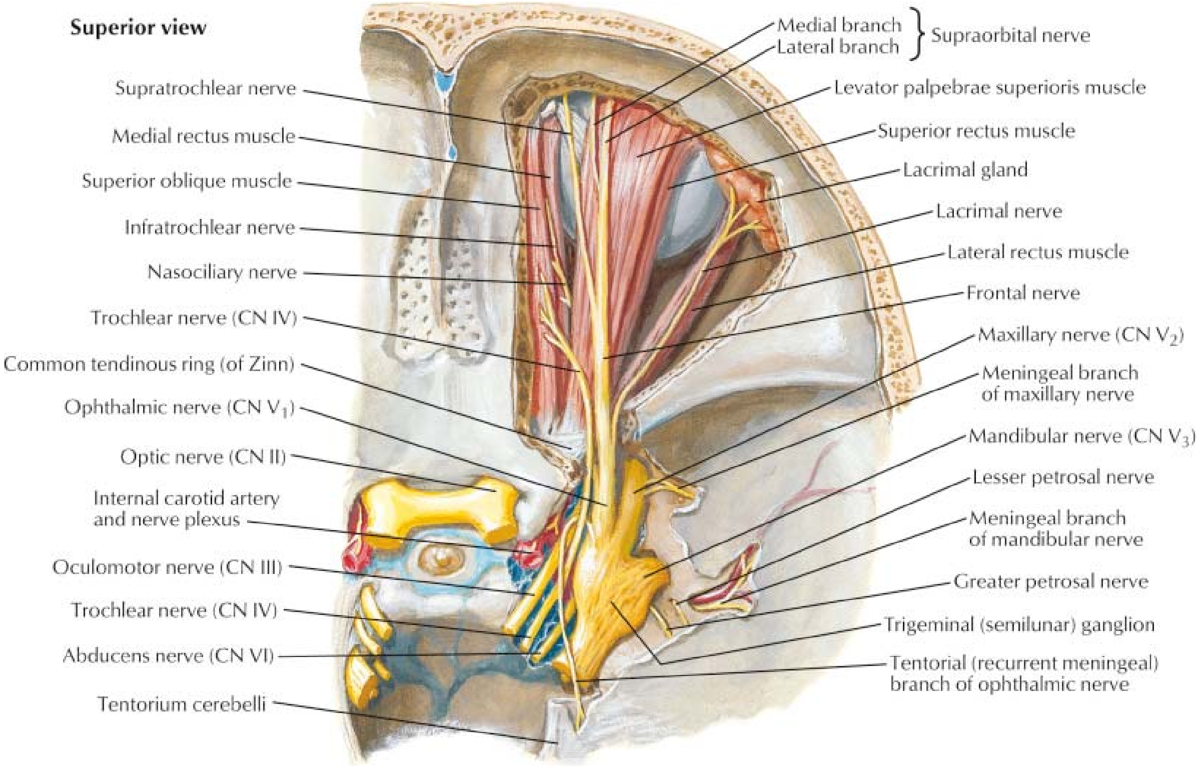

Right lateral view
Superior oblique muscle
Levator palpebrae superioris muscle
Superior rectus muscle
Medial rectus muscle
Common tendinous ring (of Zinn)
Lateral rectus muscle (*cut*)
Inferior rectus muscle
Maxillary sinus
Trochlea (pulley)
Optic nerve (CN II) (within meningeal sheath)
Lateral rectus muscle (*cut*)
Inferior oblique muscle
Superior view
Trochlea
Superior oblique muscle
Medial rectus muscle
Inferior rectus muscle
Common tendinous ring (of Zinn)
Superior tarsus
Levator palpebrae superioris muscle (*cut*)
Superior rectus muscle (*cut*)
Lateral rectus muscle
Optic nerve (CN II) (within meningeal sheath)
Superior rectus muscle (*cut*)
Levator palpebrae superioris muscle (*cut*)
Innervation of extrinsic eye muscles: anterior view
Trochlea
Superior oblique muscle
Trochlear nerve (CN IV)
Oculomotor nerve (CN III)
Levator palpebrae superioris muscle
Superior rectus muscle
Medial rectus muscle
Inferior rectus muscle
Inferior oblique muscle
Lateral rectus muscle
Abducens nerve (CN VI)
F. Netter M.D.

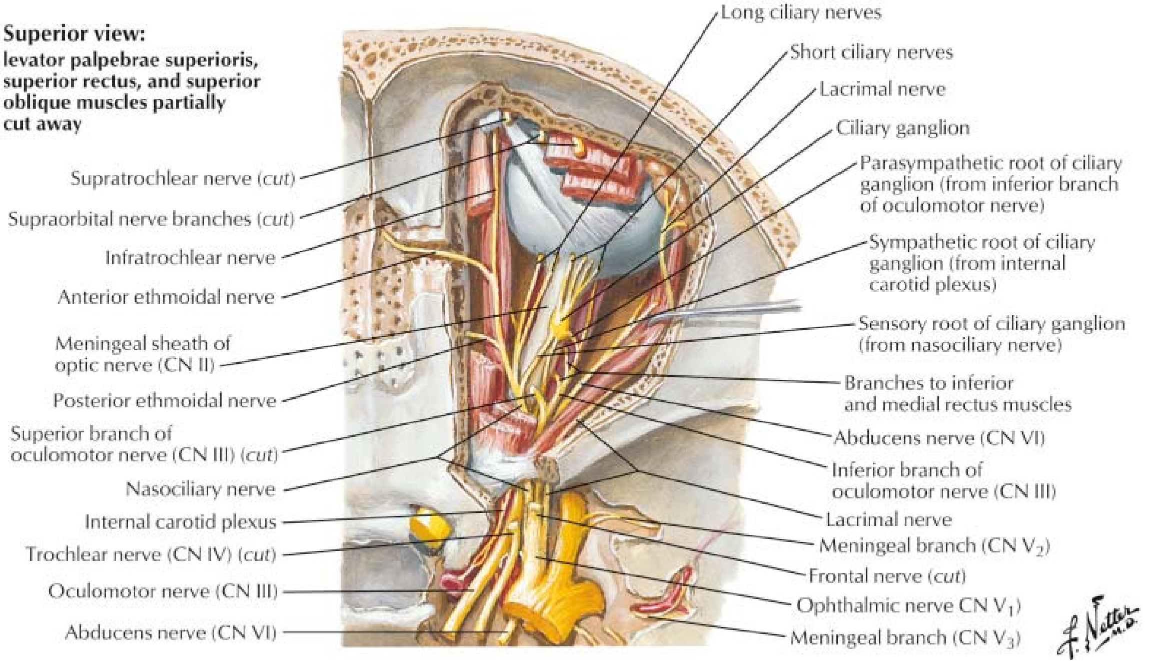
Plate 97 Nerves of Orbit

See also **Plates 61** (s0310) , **132** (s0700) , **133** (s0705)



Superior view

Medial branch
Lateral branch
Supraorbital nerve
Supratrochlear nerve
Medial rectus muscle
Superior oblique muscle
Infratrochlear nerve
Nasociliary nerve
Trochlear nerve (CN IV)
Common tendinous ring (of Zinn)
Ophthalmic nerve (CN V1)
Optic nerve (CN II)
Internal carotid artery and nerve plexus
Oculomotor nerve (CN III)
Trochlear nerve (CN IV)
Abducens nerve (CN VI)
Tentorium cerebelli
Levator palpebrae superioris muscle
Superior rectus muscle
Lacrimal gland
Lacrimal nerve
Lateral rectus muscle
Frontal nerve
Maxillary nerve (CN V2)
Meningeal branch of maxillary nerve
Mandibular nerve (CN V3)
Lesser petrosal nerve
Meningeal branch of mandibular nerve
Greater petrosal nerve
Trigeminal (semilunar) ganglion
Tentorial (recurrent meningeal) branch of ophthalmic nerve



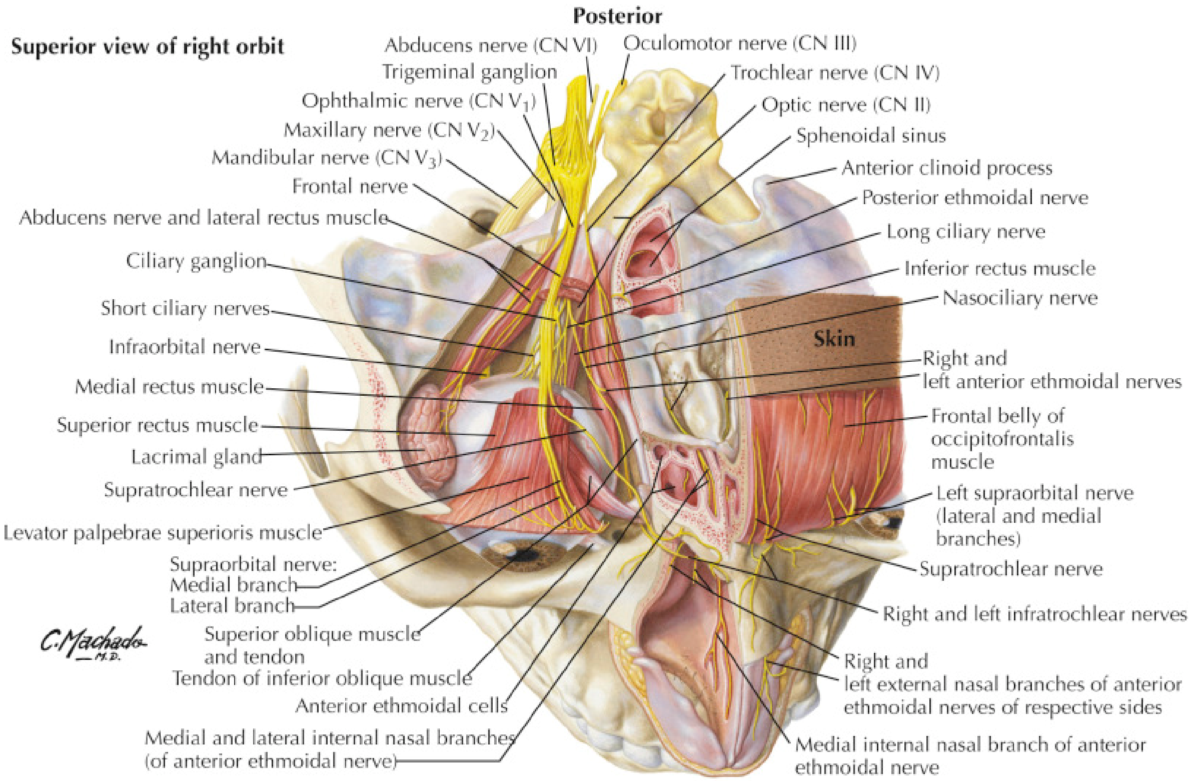
Superior view:
levator palpebrae superioris, superior rectus, and superior oblique muscles partially cut away

Supratrochlear nerve (cut)
Supraorbital nerve branches (cut)
Infratrochlear nerve
Anterior ethmoidal nerve
Meningeal sheath of optic nerve (CN II)
Posterior ethmoidal nerve
Superior branch of oculomotor nerve (CN III) (cut)
Nasociliary nerve
Internal carotid plexus
Trochlear nerve (CN IV) (cut)
Oculomotor nerve (CN III)
Abducens nerve (CN VI)
Long ciliary nerves
Short ciliary nerves
Lacrimal nerve
Ciliary ganglion
Parasympathetic root of ciliary ganglion (from inferior branch of oculomotor nerve)
Sympathetic root of ciliary ganglion (from internal carotid plexus)
Sensory root of ciliary ganglion (from nasociliary nerve)
Branches to inferior and medial rectus muscles
Abducens nerve (CN VI)
Inferior branch of oculomotor nerve (CN III)
Lacrimal nerve
Meningeal branch (CN V2)
Frontal nerve (cut)
Ophthalmic nerve CN V1
Meningeal branch (CN V3)
F. Netter M.D.

Plate 98 Superior and Anterior Views of Orbit

See also **Plates 96** (s0505) , **97** (s0510)

Superior view of right orbit


Posterior
Abducens nerve (CN VI)
Oculomotor nerve (CN III)
Trigeminal ganglion
Trochlear nerve (CN IV)
Ophthalmic nerve (CN V1)
Optic nerve (CN II)
Maxillary nerve (CN V2)
Sphenoidal sinus
Mandibular nerve (CN V3)
Anterior clinoid process
Frontal nerve
Posterior ethmoidal nerve
Abducens nerve and lateral rectus muscle
Long ciliary nerve
Ciliary ganglion
Inferior rectus muscle
Nasociliary nerve
Short ciliary nerves
Skin
Infraorbital nerve
Right and left anterior ethmoidal nerves
Medial rectus muscle
Superior rectus muscle
Frontal belly of occipitofrontalis muscle
Lacrimal gland
Supratrochlear nerve
Left supraorbital nerve (lateral and medial branches)
Levator palpebrae superioris muscle
Supratrochlear nerve
Supraorbital nerve:
Medial branch
Lateral branch
Right and left infratrochlear nerves
C.Machado M.D.
Superior oblique muscle and tendon
Right and left external nasal branches of anterior ethmoidal nerves of respective sides
Tendon of inferior oblique muscle
Anterior ethmoidal cells
Medial and lateral internal nasal branches (of anterior ethmoidal nerve)
Medial internal nasal branch of anterior ethmoidal nerve

Anterior view of right orbit (eyeball transparent)

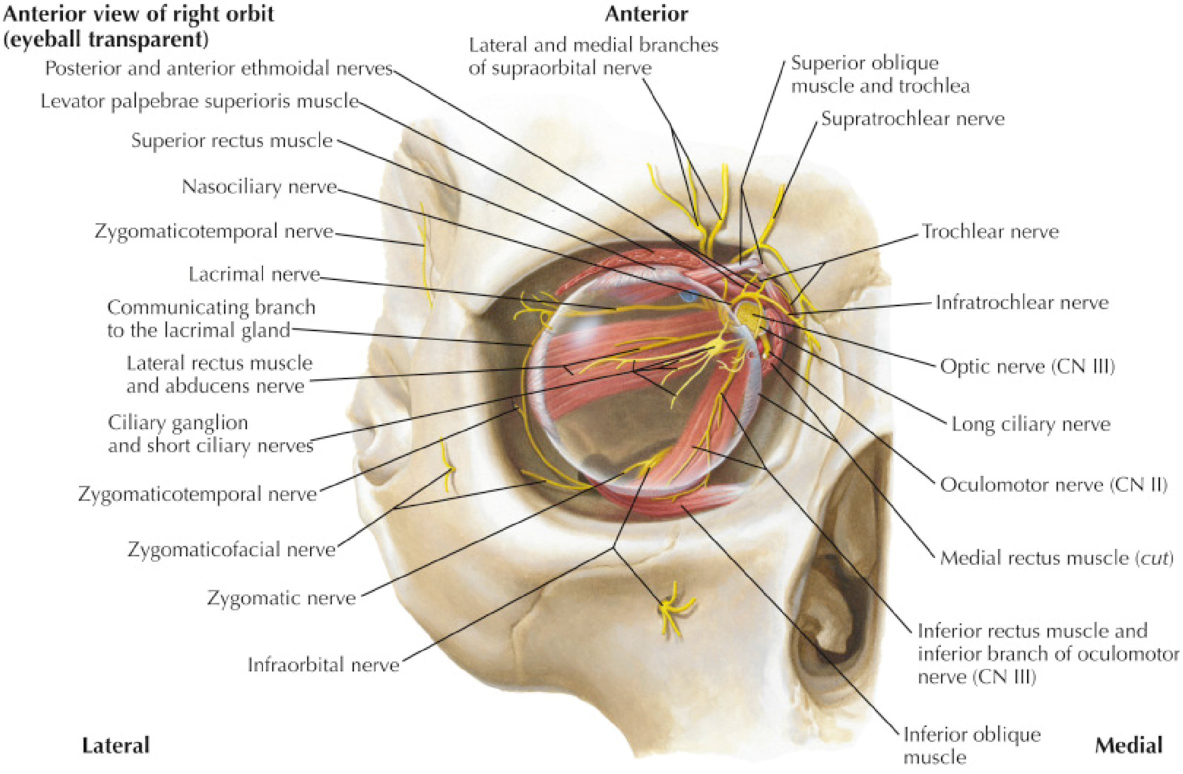

Anterior
Lateral and medial branches of supraorbital nerve
Posterior and anterior ethmoidal nerves
Superior oblique muscle and trochlea
Levator palpebrae superioris muscle
Supratrochlear nerve
Superior rectus muscle
Nasociliary nerve
Zygomaticotemporal nerve
Trochlear nerve
Lacrimal nerve
Infratrochlear nerve
Communicating branch to the lacrimal gland
Optic nerve (CN III)
Lateral rectus muscle and abducens nerve
Long ciliary nerve
Ciliary ganglion and short ciliary nerves
Oculomotor nerve (CN II)
Zygomaticotemporal nerve
Medial rectus muscle (cut)
Zygomaticofacial nerve
Zygomatic nerve
Inferior rectus muscle and inferior branch of oculomotor nerve (CN III)
Infraorbital nerve
Inferior oblique muscle
Lateral
Medial

Plate 99 Arteries and Veins of Orbit and Eyelids

See also **Plates 10** (s0040) **, 84** (s0435)